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environmental
government
affairs seminar

proceedings

CHANGING ATTITUDES ABOUT THE ENVIRONMENT IN THE 90's

October 21 to 24, 1990
Westin Hotel, Ottawa

sponsored by

The A&WMA
Canadian Government
Affairs Committee

Environment Canada

sixième colloque
des affaires
gouvernementales
canadiennes sur
l'environnement

comptes rendus

LES ATTITUDES CHANGEANTES ENVERS L'ENVIRONNEMENT DANS LES ANNÉES 1990

21 au 24 octobre 1990
l'hôtel Westin, Ottawa

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Environnement Canada

6th CANADIAN GOVERNMENTAL AFFAIRS
SIXIÈME COLLOQUE DES AFFAIRES
GOUVERNEMENTALES CANADIENNES SUR
L'ENVIRONNEMENT

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TABLE of CONTENTS / TABLE des MATIÈRES

PAGE

ORGANIZING & PROGRAM COMMITTEE / COMITÉ D'ORGANISATION et PROGRAMME i

ACKNOWLEDGEMENT ii

LIST of REGISTRANTS / LISTE des PARTICIPANTS v

SUMMARY of SESSION ONE THROUGH FOUR of the SEMINAR - Shaun McLaughlin 1

WHAT ARE THE PRIORITIES? / QUELLES SONT LES PRIORITÉS?

William Domm *"Federal Government Response to Changing Attitudes"* 11

Don Fast *"Provincial Government Response"* 19

Jean Bélanger *"Being Responsible Partners in Canadian Society"* 41

Gilles Lamoureux *"Incidences du développement dans les pays du Tiers Monde sur la politique canadienne"* 63

Kirk Dawson *"Climate Change! The Basis for Scientific Concern"* 81

CURRENT REGULATORY INITIATIVES - ARE THEY SUFFICIENT?
INITIATIVES DE RÉGLEMENTATION ACTUELLES - SONT-ELLES SUFFISANTES?

H.A. Clark *"The Value of Federal Regulatory Initiatives in Protecting the Environment"* ... 91

Barry Kershaw *"Transportation and the Environment"* 113

SherriWatson *"NO_x/VOC Action Plan for Canada"* 125

Bruce Walker *"The Public's Role in Air Quality Management"* 141

David Bates *Luncheon Address* 157

Dane MacCarthy *"Energy Efficiency Programs at Ontario Hydro"* 163

John Buccini *"Regulation of Priority Substances Under CEPA - Experience to Date"* 171

Eva Rosinger *"Facing National Environmental Issues - The Revitalized CCME"* 181

Bill Hancox *"Nuclear Power: A Proven Sustainable Energy Source"* 187

HAZARDOUS WASTE MANAGEMENT - WHERE ARE WE GOING?
GESTION DES DÉCHETS DANGEREUX - OÙ ALLONS-NOUS?

Raymond Coté *"Hazardous Waste Management: Policies and Strategies for Changing Attitudes"* 197

Brian O'Ferrall *Hazardous Waste Management: "Minimizing and Avoiding Liabilities"* 211

Yvon Charbonneau *"Principales Orientations Proposées par la Commission d'enquête sur les déchets dangereux"* 261

Ken Simpson *"Future Directions for Hazardous Waste Management in Alberta"* 281

Charles Caccia *Luncheon Address* 293

PANEL DISCUSSION

Roger Lafleur *Summary of Panel Discussion* 299

list of registrants / liste des participants
A&WMA - 6th CANADIAN ENVIRONMENTAL GOVERNMENT AFFAIRS SEMINAR
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Dick, R.B.	Ultramar Canada Inc., Montreal, Quebec
DOMM, Bill	M.P. Peterborough, Peterborough, Ont.
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DUNLOP, Art	Polysar Rubber Corporation, Sarnia, Ontario
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ERTEL, Gerry	Shell Canada Products Ltd., Fort Saskatchewan, Alberta

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GENTES, Philippe	Environnement du Quebec, Quebec, Quebec
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GOUGH, Michael	Knoman Consulting Inc., Ottawa, Ontario
GRAVEL, Jean	Knoman Consulting Inc., Ottawa, Ontario
GRIER, R.	Ontario Ministry of the Env.
GRIFFITHS, Richard	Waste Management Corp., Toronto, Ontario
GRUENWOLDT, Dieter	Public Works Corp., Ottawa, Ontario

HAMES, Don	Dow Chemical Canada Inc., Sarnia, Ontario
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HANCOX, William	AECL, Ottawa, Ontario
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IWASAKI, Caroline	Environment Canada, Hull, Quebec
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JOLICOEUR, Alain	Environment Canada, Hull, Quebec
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KELLEY, Danford	Waste Management Branch, Hull, Quebec
KERSHAW, Barry	Transport Canada, Ottawa, Ontario
KIRK, D.	Environment Canada, Downsview, Ontario
KONOW, Hans	Canadian Electrical Assoc., Montreal, Quebec
KOREN, Elaine	EMR, Ottawa, Ontario
KOSTELTZ, Anthony	Environment Canada, Hull, Quebec
KOZLOWSKI, Anna	Alberta Environment, Edmonton, Alberta
KUPCHANKO, Eugene	Chem-Security Ltd., Vancouver, B.C.
LAFONTAINE, Josee	Comm. Capitale Nationale, Ottawa, Ontario
LAFORTE, Robert	D.S.C. Lake Shore, Pointe Claire, Quebec
LAGACE, Denis	Energy Mines & Resources, Ottawa, Ontario
LAHTI, Helen	Rosmar Consulting, Toronto, Ontario
LAJOIE, Louise	D.S.C. Lakeshore, Pointe-Claire, Quebec
LAMARRE, Denis	Shell Canada Products Ltd., Montreal, Quebec
LAMBERT, Gord	Esso Resources Canada Ltd., Calgary, Alberta
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LAVERGNE, Laurent	Public Works Canada, Ottawa, Ontario
LE, Marie-Jeanne	Noranda Inc., Toronto, Ontario
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LEDERER, Frid	Neptune Bulk Terminals Ltd., North Vancouver, B.C.
LEFEBVRE, Daniel	CRIQ, Ste-Foy, Quebec
LOGAN, Jeannette	Consultant, Ottawa, Ontario
LORD, Don	Canada Post Corp., Ottawa, Ont.
LOVE, Rod	Alberta Environment, Edmonton, Alberta
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LULMAN, Phil	TransAlta Utilities Corp., Calgary, Alberta
MacCARTHY, Dane	Ontario Hydro, Toronto, Ontario
MacGREGOR, Alison	Can. Environment Network, Toronto, Ontario
MacLAREN, Diane	National Defence, Ottawa, Ontario
Madill, Howard	NAP - YK District, Yellowknife, N.W.T.
MAJTEMYI, Cathy	Southam Communications, Toronto, Ontario
MAKIN, Michael	Canadian Construction Assoc., Ottawa, Ontario
MARSAN, Andre	Minis. de l'Env. du Quebec, Ste-Foy, Quebec
MASON, Philip	Nova Corporation of Alberta, Calgary, Alberta
MATTILA, Kerry	Canadian Petroleum Products, Ottawa, Ontario
MAY, Elizabeth	Cultural Survival (Canada)
McGUIRE, Tom	Dofasco Inc., Hamilton, Ontario
McINNIS, Bob	Energy Mines & Resources, Ottawa, Ontario
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McLAUGHLIN, Shaun	Businesstek Pub. Inc., Ottawa, Ontario

McMILLAN, Ann	Environment Canada, Downsview, Ont.
McTAGGART-COWAN, J.	Energy Mines & Resources, Ottawa, Ontario
MENYASZ, Peter	Environment Policy & Law, Nepean, Ontario
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MEYERHOF, Dorothy	Health & Welfare, Canada, Ottawa, Ontario
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PICHE, Ed	Ministry of Environment,Toronto, Ontario
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SIXTH CANADIAN ENVIRONMENTAL GOVERNMENT AFFAIRS SEMINAR: CHANGING ATTITUDES ABOUT THE ENVIRONMENT IN THE 90s

Summary of sessions one through four

by Shaun McLaughlin, Businesstek Publishing Inc.

The Sixth Canadian Environmental Affairs Seminar was held at the Westin Hotel, Ottawa, October 21 through 24, 1990. It was sponsored by the Air & Waste Management Association (Canadian Government Affairs Committee) and Environment Canada. The theme of the seminar was *Changing Attitudes About the Environment in the 1990s*. Each of the five sessions followed a sub-theme within the overall theme.

The speakers were senior representatives of provincial and federal government departments and agencies, industries and public advocacy groups. The information presented was oriented to the regulatory and public environment rather than to technical matters. Two common threads throughout the sessions were the need to meet public expectations and to form partnerships to better tackle environmental problems.

Paul Beauchemin, Conference Chairperson, opened the seminar with an outline of the events and discussions ahead. He introduced **Charles Pratt**, President of A&WMA, who briefly discussed the aims and concerns of the association. He stressed the need for a stronger outward-looking communications effort, especially public education, to let the public know there are people working on the waste problem. He asked veteran members to attract young professionals and students to the association, to offer themselves as guest speakers and to "go and bring people in."

FIRST SESSION

The theme of the first session was *What are the Priorities?* It was chaired by environmental consultant **Eugene Kupchanko**.

The first speaker was **Bill Domm**, MP Peterborough. He addressed the topic *Federal Government Response* on behalf of Environment Minister Robert de Cotret. The Green Plan, the current major environmental initiative within the federal government, was understandably a large part of his talk.

"Canadians are looking to the federal government to take the lead in the campaign to restore the environment. They want involvement of the public in the environmental policy-making process. Canadians see the need to improve environmental decision-making at all levels of our society." He noted that more than half the initiatives in the Green Plan were proposed during public consultations.

"Canadians are demanding new environmental legislation, as well as stricter, more consistent enforcement of present laws and regulations. They expect the federal government to set the standards for environmental stewardship. [They] recognize the need for new partnerships between governments, the private sector and non-government organizations." According to Mr. Domm, the Green Plan will address these and other concerns.

Donald Fast, Executive Director, Environmental Protection Division, British Columbia Environment Ministry, presented the *Provincial Government Response.*

"I believe that government agencies must adopt new approaches to address the complex environmental issues facing us today. We must anticipate and prevent rather than react and repair.

"The British Columbia government is working on a policy document which should be available later this year. I guess it's our version of the Green Plan. It's called *Environment 2001.* It identifies and prioritizes critical environmental issues across ministries with a 10-year plan of action." The public is invited to discuss a draft of the document.

B.C. is expanding its polluter-pay programs, said Mr. Fast. The province already has a system of waste discharge fees that is generating $3 million a year in revenue. This regulation is now under review to apply prorated levees to hazardous waste and other waste from both industries and municipalities. It is part of a plan to use economic incentives/disincentives to change attitudes about pollution. The province is also promoting energy efficiency, alternative fuels, recycling and returnable bottles.

The first industry spokesperson was **Jean Bélanger**, President of the Canadian Chemical Producers' Association (CCPA). He spoke on the topic of *Being Responsible Partners in Canadian Society.*

The chemical industry believes that better environmental practices are essential to all Canadian businesses, said Mr. Bélanger: "There is no doubt that when it comes to environmental attitudes, any business sector standing still risks being run over by the majority who are moving forward."

Early in the 1980s, the CCPA developed as set of guiding principles aimed at ensuring the safety of its employees, customers and the environment. The guiding principles evolved into the more comprehensive Responsible Care program, a code of practices, procedures and standards that take a "full-life cycle approach" to chemicals. Mr. Bélanger sees Responsible Care as a model of how industries should meet their environmental responsibilities.

In response to a question, Mr. Bélanger said the CCPA's policy on hazardous chemical waste is they should be properly disposed of but there are very few facilities to do this. He called on governments and communities to lift the roadblocks to waste disposal facilities.

Elizabeth May, Director of Cultural Survival Canada and National Director of the Sierra Club of Canada, was the first environmentalist to speak. She posed the questions: Why are environmentalists so constantly cranky? Why are they never satisfied?

"I think part of the reason we appear never to be satisfied is that we aren't. By the time you've fought 15 years to get acid rain cleaned up, by the time all that effort has been made and you see you are on the verge of a success on that one issue, by that time the awareness of global warming has increased to such a state that, while we rejoice at the agreement on a clean air act in the United States, we are aware the rhetoric that used to be applied to acid rain is now being applied by John Sununu and others from the White House to the global warming issue. And we are back at square one, starting over -- perhaps not quite as far back as when [former President] Ronald Reagan thought acid rain might come from ducks.

"We are fundamentally, despite all the evidence, eternal optimists. Or at least we have to be operational optimists. It is not possible to work on these issues and think that it is all hopeless.

"The major force driving environmentalist groups is urgency. We have a tremendous sense of urgency. That's why we seem so driven. That's why we seem so unreasonable.

"The good news is most of the people in the environmental movement are more than prepared to open up doors and out-reach our hands for you -- government, industry, other citizen groups, whatever -- because we really can't afford divisiveness any more. There are a lot of things we don't have time for. We have no time for apathy, we have no time for cynicism, and we have absolutely no time for divisiveness."

Following her formal presentation, Ms. May redefined the four 'Rs' of recycling as: reduce, reuse, recycle and reject. Several speakers in following sessions remarked on this novel 'reject' option.

Gilles Lamoureux, Director General, Canadian International Development Agency (CIDA), addressed the *Impact of Third World Development on Canadian Policy.* Speaking in both official languages, Mr. Lamoureux said Canada must help Third World countries develop new economic models to fight poverty. Poor economies in developing nations give individuals and governments no choice but to make poor environmental decisions.

He feels there are good opportunities for Canadian businesses, who already have a good reputation abroad, to establish links and partnerships in developing countries that will help their economies and ultimately their environments. He cautioned business people to learn the culture and the economy of a country first in order to be successful.

Questions and remarks from the audience stressed the need for population control to alleviate environmental pressures in the Third World. Mr. Lamoureux agreed with the importance of population control but remarked it is a highly sensitive issue. Ms. May added that during her attendance at a United Nations conference this summer to plan for the 1992 U.N. Conference on Environment and Development in Brazil, there was strong pressure from Third World countries to keep population off the agenda. It was only the hard work of the Canadian delegation that kept population on the agenda under the term "demographic pressures," she said.

The last speaker of this session was **Dr. Kirk Dawson**, Director General, Canadian Climate Centre (CCC), who addressed *The Greenhouse Challenge*. He said there is no argument in science about the existence of a greenhouse effect -- it is the natural mechanism that keeps this planet habitable -- but there is still a minority of scientists who argue over what happens when the mixture of atmospheric gases is altered due to human activity. Based on samples of Antarctic ice, scientists know the current concentration of carbon dioxide (CO2) is now the highest it's been in 160,000 years at 360 parts per billion (ppb).

Mr. Dawson mentioned three popular global warming projections: in the high scenario, average world temperature increases 0.8C per decade; in the middle scenario, it increases 0.3C per decade; and in the low scenario, it goes up only 0.1C per decade. He favours the middle scenario based on data from the CCC climate model, which he feels is the best in the world. In the middle scenario, he said seas will rise about six centimetres per decade, the prairies will become warmer and drier, and the Arctic Ocean may become ice-free in winter.

SECOND SESSION

The second session was held on the morning of October 23 and dealt with the theme *Current Regulatory Initiatives -- Are They Sufficient?* It was chaired by **Ken Smith**, Assistant Deputy Minister, Alberta Environment Ministry.

The first speaker of the morning was **Dr. David Balsillie**, Assistant Deputy Minister, Environment Services Division, Ontario Environment Ministry. He talked about *New Provincial Regulations for Air and Waste.*

He discussed at length the pending Clean Air Program (CAP), an amendment to Ontario Regulation 308. Regulation 308 is outdated, according to Dr. Balsillie -- its controls are limited and it allows for dilution to the point of impingement, rather than enforcing fixed emission limits.

CAP will change this, he said. "There will limits on the amount of material which will be allowed to be put out from a given source, and that will be technology-driven. The question of which toxics are controlled will be based on the pollutant's effects. In other words, the most hazardous compounds will be tackled first."

All compounds will be classified into one of three groups. The most hazardous will require lowest-achievable-emission-rate [LAER] technology. This includes lead, dioxin, benzene, etc. Level-two compounds will require best-available-control technology economically achievable [BACTEA]. That would include sulphur dioxide (SO2) and nitrogen oxides (NOx). Level-three compounds will require reasonably-available-control technology [RACT]. These include inert particulates and odors.

Most of CAP will be phased in over 10 years. Sources which are emitting level-one compounds will have to apply for a Certificate of Approval showing they've got LAER technology within three years.

"There is a spin-off to this. It is predicted we will bolster the Ontario environmental protection industry and that there will be an opportunity here for a new type of industry, developed in Ontario, that could lead to exports."

Also, Ontario will lower vehicle emissions through reductions in the volatility of gasoline in summer, the trapping of fuel emissions during bulk fuel transfers, and a possible toughening of vehicle inspections.

The next speaker was **Tony Clark**, Director General, Conservation and Protection, Environment Canada. He had been appointed to his position only six weeks earlier and he discussed pending federal environmental regulations and initiatives.

"Were going to be looking at economic instruments -- all types and shapes and forms. We're hoping that as the Green Plan unfolds, there will be significant discussions in the public sector on the question of economic instruments, appropriate ones."

Noting that Environment Canada is "seen as a toothless tiger," he said. "We're gearing to the future. We're developing regulations. We're hoping the Green Plan is going to be of some help with our mandates, especially with respect to CEPA and the Fisheries Act."

"I gather that the organization that I have inherited has made a commitment to produce something like 64-plus regulations within the next three years. I still have to find out how we're going to do that," he added in reference to a limited budget and resources.

He sees regulations as one tool in a arsenal of tools. "They must be practical. They must be doable. They must be affordable." New regulations will lead to a healthier environment, increased R&D, and a stronger Canadian environmental protection industry that can compete off-shore, he predicted.

Barry Kershaw, Director, Vehicle Safety and Energy Operations, Transport Canada, discussed the *Impact of Environmental Regulation on Transportation in the 90s.* He acknowledged that transportation is a major source of the emissions that cause ground-level pollution and atmospheric warming.

Mr. Kershaw said 20-year forecasts predict fuel consumption will increase for industrial and power generation, but decrease for transportation even as the number of vehicles increases.

There are still problems to tackle. Older cars are doing 40% of the driving and producing 80% of the pollution, according to Mr. Kershaw, "so this is where we have to concentrate our efforts, in cleaning up these older vehicles." Also, railways, airlines and shipping have made few improvements and, while they are a much smaller contributor to emissions than vehicles, they will become significant when vehicle emissions decline further. He noted that airlines and shipping are hard to control due to their international nature. He said Transport Canada is looking at ways to apply emission-reduction technology to construction equipment, lawnmowers and outboard motors, since taken together these pollution sources add up.

In response to a question, Mr. Kershaw stated emission standards also apply to vehicles using alternative fuels.

Bruce Walker, Research Director with STOP, a Montreal environmental group concerned with air and water quality, addressed the topic *The Public's Role in Air Quality Management.*

Speaking in both French and English, Mr. Walker explained that, while public environmental pressure has worked well against industry in cleaning up pollutants, such as lead in gasoline, it has not been as effective against government-owned polluters.

As an example, he described the Montreal-owned garbage incinerator built in 1970. Through Quebec's access-to-information law, STOP found the incinerator regularly violates provincial emission standards. He added that the incinerator was specifically exempted from the city's air pollution by-laws.

"This seems to be a trend," he said. "Governments have a much harder time regulating a publicly-owned source of pollution than a privately-owned source of pollution."

Mr. Walker did welcome the federal government's willingness to seek public input into the pending air quality management plan for NOx and VOC. (This plans was detailed by the next speaker.)

The last speaker of the session was **Sherry Watson**, Acting Director, Industrial Programs Branch, Environment Canada, who described the *NOx/VOC Action Plan for Canada.*

Canada made progress between 1970 and 1985 in decreasing levels of "conventional" pollutants -- carbon monoxide (CO), NOx, SO2, lead, and particulates, she said, but we have not done well on reducing ozone. Most major cities exceed the federal standard of 82 ppb at times during summer. The worst offenders are in the Windsor-Quebec City corridor. Other bad spots are in the southern Maritimes and the lower Fraser River valley. Ground level ozone is formed through reactions of NOx and VOC in sunlight. (She defined VOC as volatile non-methane organic hydrocarbons.)

"If you look at the NOx emission projections between 1985 and 2005 you see that all sources are basically influenced by transport ... primarily due to an increase in fleet size and population growth. With respect to VOC, you see a parallel situation." The transportation and fossil fuel industry are the major source of the problem, though industrial solvents make a significant contribution to VOC.

Due to international treaty obligations regarding NOx and Canadian concerns over ground-level ozone, the federal and provincial environment ministers requested that Environment Canada develop a NOx/VOC action plan. The NOx protocol was developed first. The VOC protocol is being developed.

"The first phase has been identified and published in draft form in March. The other two phases have yet to come. The first phase contains 58 initiatives, 24 NOx-directed initiatives and 34 VOC initiatives. They are balanced between federal and provincial responsibilities. This plan is going to the Canadian Council of Ministers of the Environment (CCME) this November for their decision."

The plan will help meet the 82 ppb goal for ozone. As a side benefit, it will help reduce toxic emissions, she said, since many VOCs are on the Priority Substances List of the Canadian Environmental Protection Act (CEPA). The plan's energy conservation and efficiency measures will also reduce carbon-dioxide emissions by 6-7%.

"The cost is plenty. For industries it is about $1 billion a year each year by about the year 2005. For governments to develop these initiatives, it's about $100 million over a five year period," she said.

Dr. David Bates, an expert on the health effects of pollution at the University of British Columbia, was guest speaker at the first luncheon.

There is a necessity, he said, to develop non-polluting technologies. We should be working to stop pollution at the source, rather than spending billions to clean up the mess at the end of the pipe.

For example, he attended a meeting this summer in Los Angeles where a new Japanese coal-burning power plant was described. It had such low pollution "that it can only be described as revolutionary." He said the phased adoption of such technology in the U.S. "would lead to a 66% reduction in CO2, a 85% reduction in SO2, and an 82% reduction in NOx."

"This emphasis on substituting non-polluting industry for old industry with controls is going to be the topic of the 90s. We're going to see pressure on government to mandate the replacement of inefficient, high-pollution plants, which are costly to run and [make it] difficult to achieve even present objectives. And the finger will be pointed at Eastern Europe, which failed to do that in time -- operating coal plants for 25 years that were not only grossly inefficient but grossly polluting."

THIRD SESSION

Following lunch, the third session continued with the theme of the previous session *Current Regulatory Initiatives – Are They Sufficient?* It was chaired by **Dr. Raymond Brouzes**, Director of Environmental Affairs, Alcan Aluminum Ltd.

The first speaker of the session was **Dane MacCarthy**, Vice President of Energy Management, Ontario Hydro. His topic was *Energy Efficiency Programs at Ontario Hydro*.

"Faced with increasing demands for electricity, public concern with the environmental impacts of building conventional coal-fired and nuclear plants, and a slow and arduous regulatory route ahead of us, we have few options to meet electricity needs in the short term," he explained. "Fortunately, demand management is one promising source of power which we are able to tap right away.

"It has the potential to yield a substantial amount of power at a cost that is less than or comparable to building new generating facilities. Pursuing demand management is the only way we can demonstrate to the public and to our political masters that new supply is ultimately needed.

"Demand management has very limited negative impacts on the environment." As an example, he noted that the average house uses about 700 kilowatt-hours annually just for lighting with standard bulbs. To provide that power, 630 kilograms (kg) of CO2 and 12 kg of acid-gas emissions are produced. An energy efficient bulb uses 75% less electricity and contributes up to 85 kg less greenhouse gases per year.

Ontario Hydro's goal, said Mr. MacCarthy, is to save 4.5 million kilowatts by 2000 through demand management. That is equal to the power used by Metro Toronto, he explained, and is roughly equivalent to the electricity produced by all reactors at the Pickering nuclear power plant.

Next in the session was **Dr. André Marsan**, Assistant Deputy Minister, Quebec Environment Ministry, dealt with the topic *Are Present Regulatory Measures Sufficient?*

Speaking in French, Mr. Marsan said reduction of waste is one of the priorities of his department. They want to reduce by 75% the various types of waste entering the environment, with particular attention paid to toxic waste. Their program will start by dealing with waste from five major industries: paper, mines, metallurgy, chemistry, and petroleum. Companies in these industries will be required to get an emissions permit that must be renewed every five years. Extreme violations of the permit's restrictions could lead to cancellation of the permit, according to Dr. Marsan.

Dr. John Buccini, Director, Commercial Chemicals Branch, Environment Canada, also addressed the control of toxic wastes in his paper *Regulation of Priority Substances Under CEPA – Experience to Date.*

Dr. Buccini explained how CEPA works in regard to potentially toxic emissions: substances, which can be just about any potentially polluting material, get added to the Priority Substances List (PSL); once on the list, they are passed to a review group to be assessed for toxicity; if found toxic, regulations are drawn up to control them. He said, of the 44 substances on the original PSL, only two -- some dioxins and furans -- have been fully assessed by a review group and control regulations issued.

The 1989 legislation requires any substance on the PSL to be reviewed within five years. He said, while they get only one review document every four months now, they will soon have to handle one per month to meet the review schedule.

Dr. Buccini did note that the PSL step can be skipped and a substance fast-tracked to the toxic list. He gave halons as a recent example.

Dr. Eva Rosinger, Director General, Canadian Council of Ministers of the Environment (CCME), described how the provinces and federal government cooperate on the environment in her paper *Facing National Environmental Issues -- The Revitalized CCME*.

She detailed how a series of committees within CCME work, with public input, to achieve a national environmental strategy. This includes harmonization of environmental legislation, policies, programs, assessment, review and implementation; continued development of nationally consistent environmental standards, objectives and strategies on emerging environmental issues; the development of bilateral accords and issue-specific agreements; continued development of scientific databases to support sound environmental decision-making; and improvement of international and domestic linkages.

The session closed with two opposing views on the environmental impact of nuclear power. The first to speak was **Dr. William Hancox**, Corporate Vice President, Technology and Planning, Atomic Energy Canada Limited (AECL). His topic was *Nuclear Power: A Proven Sustainable Energy Source*.

Dr. Hancox projected energy needs into the middle of the next century when the world population has reached 10 billion. He started with the assumption that the standard of living of most people will have neared the current western standard. He predicted that, even with a 50% reduction in energy intensity through conservation and efficiency, the world's annual energy demand will be 1000 exajoules (the 1988 demand was 393 exajoules).

He went on to predict that fossil fuel use will be steady, wood energy will double, and solar and wind energy will increase from less than one to 50 exajoules. Together they will provide 450 exajoules, which leaves a 550 exajoule shortfall. According to Dr. Hancox, the energy source best suited to make up the difference is nuclear power -- the technology exists and it doesn't contribute to acid rain or global warming.

The other side of the thorny nuclear debate was presented by **Norman Rubin**, Director of Nuclear Research, Energy Probe. His topic was *Nuclear Power: Why Environmentalists Haven't Changed Their Mind.*

One reason he hasn't changed his mind is because nuclear reactors produce "incredible quantities of toxic substances" (radionuclides), of which "a very small percentage is released to the environment. That small percentage is enough, I believe, to be a priority pollutant on anybody's scale." He noted that radionuclides are exempted from provincial and federal priority pollutant lists. Exception for the small Slowpoke II reactor, Mr. Rubin also feels reactor design is inherently unsafe.

"It [nuclear power] doesn't even help with CO2," he said. To reduce CO2 by 50% by 2020, global energy efficiency would only have to increase by 4.5% annually; this assumes global GNP increases by 3% a year. Mr. Rubin said this goal is doable, based on past conservation efforts by countries like the U.S. and Japan. Conversely, to reduce CO2 by the same amount using nuclear power rather than efficiency, the world would have to start up 14 1000-MW reactors each week from now to 2020. Based on past efforts, this is not doable, he said, since the best ever achieved was one reactor every three weeks during peak years nearly two decades ago.

Mr. Rubin also pointed out that as nuclear reactors age their energy output drops due to downtime from mechanical breakdowns. While new CANDU reactors operate at about 90% efficiency, older reactors achieve only about 40%. This has required coal-fired plants to make up the difference, which has increased acid-gas emissions, he added.

FOURTH SESSION

The fourth session was held on the morning of October 24 and dealt with the theme *Hazardous Waste Management – Where Are We Going?* It was chaired by **Glenn Allard**, Associate Director General, Environmental Protection, Environment Canada.

Dr. Raymond Côté, Associate Director, School of Resource and Environmental Studies, Dalhousie University, presented a paper entitled *Hazardous Waste Management – National Policies, Provincial Coordination, Local Solutions.*

He said dealing with hazardous waste calls for more than disposal. "The emphasis on hazardous waste management to date has been on minimizing the effects of wastes and on trying to store, treat, dispose of, or incinerate the wastes. I think we have got to put much more of an effort on preventing the generation of wastes in the quantities and concentrations in which they currently exist.

"We may not be able to reduce these chemical wastes to zero, but I'm sure the right combination of applied research, technology, economic instruments and legal sanctions can reduce quantities in some sectors."

Dr. Côté said he sees wastes as misused and misplaced resources. Wastes should be, wherever possible, recycled into feedstocks for other products and processes.

Brian O'Ferrall, a partner with Bennett, Jones, Verchere Barristers & Solicitors in Calgary, addressed the complex subject of *Minimizing and Avoiding Waste Disposal Liabilities*.

He said there are many ways to minimize and avoid environmental liabilities. "The obvious first means of avoiding your liabilities is to know what they are." He said this is easier said than done. "In the case of hazardous waste, the rule of law has degenerated into a complex legislative dictatorship where the only certainty is that if you do anything at all, you may have violated a statute or regulation.

"Another way to avoid liabilities in waste management is to pick your sites wisely." He explained that the site must not only be "physically and geographically well-suited to the type of activity that is proposed to be carried on at that site, but also that the site be politically and socially acceptable.

"Another way to avoid environmental liability is, of course, to attempt to contract out of it or shift it to someone else." He pointed out this is only possible where there is a sale or transfer of hazardous waste, or a transfer of assets.

He suggested other good routes are through environmental representations and warranties, environmental indemnities, and environmental liability impairment insurance.

With insurance, he cautioned, the policy should be read very closely to determine what exclusions are involved. "The time to be looking at your environmental liability [and] your comprehensive general liability coverage, is not after you've had a incident."

Yvon Charbonneau, Chairman, Quebec Commission of Inquiry on Hazardous Waste, discussed the waste disposal proposals made by his commission in its final report to Quebec Environment Minister Pierre Paradis in September.

Speaking in French, Mr. Charbonneau said the main conclusion was that it is possible and affordable in the next five years to properly manage hazardous wastes. All that is required is the political will, the cooperation of industry, and the financial resources.

He said that of the 626,000 tonnes of hazardous waste generated or imported in Quebec each year, 368,000 tonnes is unaccounted for. The Commission was able to show that, through a program of source reduction, recycling, energy recovery, and treatment, most of this missing waste can be properly dealt with by 1996.

The last speaker of the session was **Ken Simpson**, CEO, Alberta Special Waste Management Corporation. ASWM operates the Swan Hills waste disposal facility in Alberta. He described the history of the facility and expansion plans in his paper *Future Plans for Waste Disposal in Alberta.*

The Swan Hills facility avoided the NIMBY backlash that has stopped or stalled other waste disposal plants in Canada. Mr. Simpson said they did this by using the best technology they could find and by inviting public participation. "The public has been involved and continues to be involved in every decision we make." A citizen's committee, a self-appointed volunteer group, has open access to the plant and its managers.

By designing a model facility, one that is so fastidious that it collects rainwater and snowmelt from the site for treatment, they were actually invited to set up at the current location by the townspeople. With their fears about chemical pollution resolved, the local people welcomed the economic spin-offs of the plant, he explained.

Currently the plant processes only 15,000 tonnes of waste annually. With this low volume, Simpson said the plant doesn't have the economies of scale to make money. To get out of a subsidy position, expansion is pending. They have also spun off a separate company to export the plant's technology -- many off-shore industries have shown an interest.

Charles Caccia, MP Davenport, one-time Environment Minister and current member of the House of Commons Standing Committee on Environment, was the second luncheon guest speaker. He spoke of an emerging change of environmental attitude.

He theorized the change was brought on by a sense of insecurity about the future environment, by the existing damage to the environment around us, by a greater concern with quality of life, by a sense of intergenerational responsibility, and by the linkages between environment and economy described in Our Common Future (a.k.a. the Brundtland Report).

"The changing attitudes will go a long way to motivating governments, which very well understand pressures and the dangers of being out of synchronization with the public mood."

End

Sixth Canadian Environmental Government Affairs Seminar

Notes from an Address

by

William Domm, MP Peterborough

on behalf of

the Honourable Robert de Cotret

October 22, 1990

Ladies and gentlemen:

It is a pleasure and an honour to address you today on behalf of the Minister of the Environment.

Mr. de Cotret has asked me to convey his regrets that he could not be here himself. As I'm sure you can appreciate, the demands on his time are heavy. He sends his best wishes for a successful conference.

He is in Washington meeting with Mr. William Reilly, Administrator for the United States Environmental Protection Agency, to discuss acid rain and other issues.

Environmental problems cut across boundaries, jurisdictions, disciplines and social divisions. For this reason, the environment can be a unifying issue: it forces us to come together to exchange information, seek common solutions and undertake concerted action.

The Air and Waste Management Association is a fine example of the kind of partnership we need to overcome the world wide challenge posed by environmental issues. Initiatives by non-government organizations like this one play a significant part in the effort to make sustainable development a reality.

Later this fall, the federal government will release its Green Plan, which will chart Canada's environmental strategy for the next decade. The Plan is the outcome of extensive research and consultations, and these have helped shape and tailor it to our needs and means. In fact, more than half the initiatives contained in the Green Plan were proposed in the consultation process.

Thousands of Canadians took part in this process. They delivered clear and important messages.

First, Canadians are looking to the federal government to take the lead in the campaign to restore the environment. At the same time, they want continuing public involvement in the environmental policy making process.

Canadians see the need to improve environmental decision-making at all levels of our society. To make those decisions, they want environmental information that is concise and presented in non-technical language. And to gather the required information, they want more support for scientific research.

They also see the need for better education to encourage environmentally sound life styles.

Canadians are demanding new environmental legislation as well as stricter, more consistent enforcement of present laws and regulations.

They expect the federal government to set the standard for environmental stewardship. They demand that it be impeccable in its purchasing practices, in recycling and water disposal, energy efficiency and conservation, and in its environmental code of ethics, policy and legislation.

Canadians support a coordinated ecosystem approach to environmental management, and recognize the need for new partnerships between governments, the private sector and non-government organizations.

In particular, on four specific issues, Canadians want vigorous action: global warming, toxic substances, waste management, and water quality and supply.

Above all, they want action ***now***.

Responding to these messages, the Green Plan now being drafted will mirror the evolution in thinking of both Canadians and the federal government on the environment. It will provide a grand strategy for tackling our environmental problems, and may well serve as a model for other countries.

W. Domm - October 22, 1990

The Plan will be comprehensive in approach. It will call for concerted action on a broad range of issues, from climate change to parks and wildlife. This approach accords with what Canadians want and, equally important, with what we know about the interrelation of ecosystems.

The Plan will stress the need for research to give us a better perception of the problems and their solutions. It will insist on better information enabling government, industry and individuals to make more enlightened decisions. It will promote education to foster an aware public increasingly involved in environmental decisions. It will call for both the private and public sectors to account for their decisions in matters affecting the environment.

The Plan will consist of three parts.

First, it will set out what the Green Plan is designed to achieve and why this generation of Canadians must achieve it. It will outline the government's vision of Canada's environmental future. That vision provides the basis for all action proposed by the Green Plan.

Second, the Plan will present the principles underlying the government's environmental policy. These will guide the process of transforming the government's vision into action.

Third, the Green Plan will present the government's strategy for achieving its environmental goals. Among those goals are:

- ensuring clean air, water and land, and protecting the health of Canadians;
- sustaining our renewable forest, fishery and farming resources;
- conserving our natural heritage;
- managing the Arctic and its resources;

- assuring global environmental security, notably against climate change and stratospheric ozone depletion; and

- fostering environmental responsibility through better decision-making.

The Green Plan will set a vital new agenda for the government and the country. But during its development, Environment Canada has not been idle. Work has gone ahead in many areas: among these are controlling toxic chemicals, managing our water supply, protecting waterfowl, cutting acid rain emissions, reducing the use of ozone-depleting chemicals, and integrating environmental considerations into the decision-making process.

Let us take note of one initiative in particular. Early last summer, the federal government introduced a comprehensive environmental assessment reform package, the cornerstone of which is the proposed Canadian Environmental Assessment Act.

The package includes a commitment - effective immediately - to review all new federal policy and program proposals and a multimillion-dollar funding program enabling all stakeholders to take part in the public review of major projects.

While environmental assessment is complex in its application, the concept behind it is actually quite simple. Environmental assessment is a systematic method of measuring the potential effects of policies and programs on people, their environment and way of life. If the consequences are identified early, plans can be revised to minimize or, better still, counteract any negative repercussions.

The federal government is deeply committed to sustainable development and views an effective, realistic, fair and open environmental assessment process as one of the most practical means of achieving this goal.

Environmental assessment will allow us to foresee and prevent environmental problems. As a result, it will enable us to move away from the more costly - and often more environmentally damaging traditional approach of "*react and cure.*"

Stripped to its essentials, environmental assessment means sound planning - that is as healthy for the environment as it is for the bottom line. In the words of Canadian Jim MacNeill, secretary of the World Commission on Environment and Development, "In order to change the decisions we make, we have to change the way we make decisions."

There is a common belief that environmental planning is a costly addition to a project budget, but that is a fallacy. Recent studies by the United States Environmental Protection Agency have shown that environmental safeguards account for only a small percentage of project costs.

On average, environmental assessments comprise less than half of one percent of capital expenditures. This expense is but a fraction of the costs incurred for environmental clean-up to repair the damage caused by poorly planned projects - costs that are ultimately borne by government and the taxpayer.

In fact, not conducting assessments can entail ruinous expenses and endanger fragile local ecosystems. Environmental damage that results from poor project planning is often irreversible or, at best, takes many years to correct.

Ultimately, it is the worldwide environment that suffers from poor planning. Once damage begins to show up in the global environment, repairing it becomes far more difficult, both environmentally and politically.

In a nutshell, the new federal environmental assessment process bears witness to Canada's commitment to ***action*** on environmental issues. It will play a key role in achieving Canada's stated objective of becoming, by the year 2000, the industrial world's most environmentally friendly nation.

When the Green Plan is released later this fall, we will embark on a concerted program toward achieving that objective. This maybe only the first step, but it is a positive beginning that augurs well for our environmental future.

There will be many further steps, and all of us will have to share in the effort. But working together, there is no doubt that we can achieve success.

Thank you.

SPEAKING NOTES FOR

MR. DON FAST

EXECUTIVE DIRECTOR

ENVIRONMENTAL PROTECTION DIVISION

B.C. MINISTRY OF ENVIRONMENT

TO THE

1990 CANADIAN ENVIRONMENTAL GOVERNMENT AFFAIRS SEMINAR

AIR AND WASTE MANAGEMENT ASSOCIATION

OTTAWA, ONTARIO

MONDAY, OCTOBER 22, 1990

GOOD AFTERNOON, LADIES AND GENTLEMEN. IT'S A PLEASURE TO BE WITH YOU TODAY . . . AND TO HAVE THIS OPPORTUNITY TO SPEAK TO YOU ABOUT MY PROVINCE'S ENVIRONMENTAL PRIORITIES FOR THE YEARS AHEAD.

"THE PROVINCIAL RESPONSE TO CHANGING ATTITUDES CONCERNING THE ENVIRONMENT": THAT'S THE TOPIC I'VE BEEN ASKED TO DISCUSS IN THE BRIEF TIME I HAVE WITH YOU TODAY.

AS YOU WILL APPRECIATE, MY PERSPECTIVE IS THAT OF A PUBLIC SERVANT REPRESENTING ONE AGENCY IN ONE PROVINCE – THE BRITISH COLUMBIA MINISTRY OF ENVIRONMENT.

WITHIN THAT LIMITATION, I HOPE MY REMARKS WILL BE HELPFUL IN SHOWING HOW ONE JURISDICTION IS DEALING WITH A WIDE RANGE OF COMPLEX ENVIRONMENTAL ISSUES, AT A TIME WHEN CONCERN FOR THE ENVIRONMENT IS AT AN UNPRECEDENTED HEIGHT.

PUBLIC CONCERN IS FOCUSED MORE AND MORE ON THE FRAGILE NATURE OF THE ENVIRONMENT.

THIS CONCERN IS BEING HEIGHTENED BY DAILY REPORTS ABOUT ENVIRONMENTAL PROBLEMS SUCH AS THE DEPLETION OF THE OZONE LAYER, ACID RAIN, THE DISPOSAL OF HAZARDOUS WASTES, AND THE LIST GOES ON.

THE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT ARE RECEIVING WORLD-WIDE ATTENTION.

MAJOR EFFORTS ARE UNDERWAY INTERNATIONALLY TO ADDRESS ENVIRONMENTAL ISSUES.

EXAMPLES:

THE LANGKAWI DECLARATION ON THE ENVIRONMENT ISSUED BY THE HEADS OF GOVERNMENT OF THE COMMONWEALTH ONE YEAR AGO COMMITS CANADA AND THE COMMONWEALTH GOVERNMENTS TO SPECIFIC ENVIRONMENTAL PROGRAMS OF ACTION;

THE 1992 UNITED NATIONS CONFERENCE ON THE ENVIRONMENT WILL BE A FURTHER MECHANISM THROUGH WHICH INTERNATIONAL SOLUTIONS CAN BE FOUND. THE HEADS OF GOVERNMENT OF THE COMMONWEALTH HAVE PLEDGED THEIR FULL SUPPORT FOR THIS CONFERENCE.

THE WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT IS CHALLENGING THE WESTERN WORLD TO STRIVE FOR GLOBAL SUSTAINABLE ECONOMIC DEVELOPMENT BY WORKING COOPERATIVELY WITH OTHER NATIONS FOR A COMMON FUTURE. CANADIANS WANT THEIR GOVERNMENTS TO LEAD BY EXAMPLE. CANADA HAS MUCH TO BE THANKFUL FOR. WE ARE RICH IN NATURAL RESOURCES WITH APPROXIMATELY 20 PERCENT OF THE WORLD'S FRESH WATER, VAST TRACTS OF AGRICULTURAL LAND, HUGE FORESTS, AND RICH MINERAL AND PETROLEUM DEPOSITS.

THE FACT THAT NATURE HAS GIVEN US SO MUCH GIVES US ADDED RESPONSIBILITY TO SET AN EXAMPLE.

- OPINION POLLS SHOW THAT IF CANADIANS HAVE TO CHOOSE BETWEEN THE ENVIRONMENT AND ECONOMIC EXPANSION, THEY'LL PICK THE ENVIRONMENT EVERY TIME.

- PEOPLE IN CANADA VALUE THEIR HEALTH AND THE HEALTH OF FUTURE GENERATIONS MORE THAN GAINING MATERIAL WEALTH. CANADIANS ARE DEMANDING THAT ACTION BE TAKEN ; THAT WE FIND SOLUTIONS TO THE ENVIRONMENTAL PROBLEMS WE HAVE IN CANADA.

IN B.C., WE FEEL THESE PRESSURES AS ACUTELY AS ANYWHERE – PERHAPS MORE SO THAN IN SOME OTHER JURISDICTIONS. THERE IS AN EXTRAORDINARILY STRONG INTEREST IN ENVIRONMENTAL CONCERNS AMONG OUR RESIDENTS. THE "DEEP ECOLOGY" MOVEMENT HAS FIRM ROOTS IN OUR PROVINCE. ENVIRONMENTAL AND LAND-USE ISSUES ARE NEVER FAR FROM THE FRONT PAGES.

IT IS HARD FOR BRITISH COLUMBIANS TO IGNORE HOW MUCH THEY HAVE TO LOSE FROM ENVIRONMENTAL DEGRADATION. WILDERNESS, OR SEMI-WILDERNESS, IS NEVER MORE THAN A FEW MINUTES' DRIVE FROM MOST PEOPLE'S FRONT DOORS – EVEN THOSE WHO LIVE ON OUR METROPOLITAN SOUTH COAST.

ENVIRONMENTAL CONCERN IS FURTHER HEIGHTENED BY THE VIEW THAT OUR RESOURCE INDUSTRIES, THE MAINSTAY OF OUR ECONOMY, ARE HAVING A DRAMATIC IMPACT ON THE ENVIRONMENT.

WHAT THIS MEANS IS THAT PRESSURES ON GOVERNMENT TO RESOLVE ENVIRONMENTAL PROBLEMS, WHICH HAVE ALWAYS BEEN STRONG IN BRITISH COLUMBIA, HAVE BECOME PARTICULARLY INTENSE IN OUR PROVINCE AS THE GENERAL LEVEL OF ENVIRONMENTAL AWARENESS HAS GROWN ACROSS NORTH AMERICA.

WHAT SORTS OF CONCERNS ARE WE DEALING WITH?

MOST OF THE ISSUES FACING BRITISH COLUMBIA WILL BE ALL TOO FAMILIAR TO OTHER JURISDICTIONS. THEY CAN BE DIVIDED INTO TWO BROAD CATEGORIES: THOSE WHICH ARE DIRECTLY RELATED TO POLLUTION AND HUMAN HEALTH AND THOSE CENTRED ON RESOURCE MANAGEMENT CONFLICTS.

POLLUTION AND HUMAN HEALTH ISSUES

THERE IS CONSIDERABLE DEBATE ON THE LEVELS OF ACCEPTABLE POLLUTION IN RELATION TO ECONOMIC CONSTRAINTS AND THE ASSIMILATIVE CAPACITY OF THE ENVIRONMENT. HOWEVER, THERE IS LITTLE DOUBT THAT MANY TYPES OF POLLUTION POSE A SERIOUS THREAT TO HUMAN HEALTH AND THE ECOSYSTEM INTEGRITY.

POINT SOURCES OF POLLUTION, WHILE THEY MAY BE SERIOUS, CAN USUALLY BE ADDRESSED DIRECTLY THROUGH CLEANUP, RIGID STANDARDS, RESEARCH, ENFORCEMENT, AND ECONOMIC INCENTIVES AND DISINCENTIVES. A MORE DIFFICULT CHALLENGE FOR SOCIETY IS TO RECOGNIZE THAT POLLUTION PROBLEMS ARE CAUSED BY THE CUMULATIVE EFFECTS OF INDIVIDUAL LIFESTYLES. INDIVIDUALS MAY BE CONCERNED ABOUT GLOBAL WARMING BUT WILL THAT PERSON GIVE UP THEIR CAR?

POLLUTION AND HEALTH ISSUES IN BRITISH COLUMBIA INCLUDE:

- THREATS TO GROUNDWATER AND SURFACE WATER QUALITY FROM INDUSTRIAL DISCHARGES, AGRICULTURAL CHEMICALS, MUNICIPAL SEWAGE, MINE WASTES, AND LANDFILL LEACHATE;

- AIR EMISSIONS CONTRIBUTING TO THE BUILDUP OF CO_2 , OZONE DEPLETION, ACID PRECIPITATION, LOW LEVEL OZONE, LOCAL AIR QUALITY PROBLEMS AND THE LONG RANGE TRANSPORT OF AIR POLLUTANTS;

- PERSISTENT ORGANIC CHEMICALS (PAHS, PCBS, DIOXINS AND FURANS) AND HEAVY METALS (MERCURY, LEAD, CHROMIUM, CADMIUM AND ARSENIC) RELEASED INTO THE ENVIRONMENT;

- PETROCHEMICAL SPILLS IN THE MARINE ENVIRONMENT;

- SOLID WASTE PRODUCED BY HOUSEHOLDS AND THE INDUSTRIAL, AGRICULTURAL, RESOURCE AND SERVICE SECTORS;

- HAZARDOUS HOUSEHOLD AND INDUSTRIAL WASTE DISCHARGES, STORAGE, AND DISPOSAL; AND

- CONTAMINATED SITES - MANY MAY BE ORPHAN SITES AND COST MILLIONS TO CLEAN UP;

- BIOMEDICAL WASTES

RESOURCE MANAGEMENT ISSUES

RESOURCE MANAGEMENT PROBLEMS HAVE ARISEN AS TRADITIONAL CONCEPTS ABOUT DEVELOPMENT, ECONOMIC GROWTH AND RESOURCE ALLOCATION HAVE BEEN CHALLENGED BY NEW SCIENTIFIC KNOWLEDGE AND CHANGES IN THE WAY SOCIETY PERCEIVES AND VALUES THE ENVIRONMENT.

MANY RESOURCE ISSUES ARE CONNECTED WITH FORESTRY, THE DOMINANT LAND USE OVER MOST OF B.C.. NEW ENVIRONMENTAL MANAGEMENT CHALLENGES ARE PARTICULARLY EVIDENT IN THE NORTH OF THE PROVINCE DUE TO THE EXPANSION OF EXISTING INDUSTRIAL AREAS AND THE OPENING OF PREVIOUSLY ROADLESS TERRITORY TO MINING OR LOGGING.

PRIORITY RESOURCE PROBLEMS IN BRITISH COLUMBIA ARE:

- THE LONG TERM POTENTIAL IMPACTS OF GLOBAL CLIMATIC WARMING ON ECOSYSTEMS;
- THE LOSS OF NATURAL AREAS, LAND PRODUCTIVITY AND BIODIVERSITY;
- SITE-SPECIFIC IMPACTS OF RESOURCE EXTRACTION AND INDUSTRIAL DEVELOPMENT ON NATURAL SYSTEMS;
- THE GROWTH OF TOWNS AND CITIES; AND
- CULTURAL, RECREATIONAL AND SCENIC CONCERNS.

B.C.'S MANAGEMENT STRATEGY

GOVERNMENT AGENCIES MUST ADOPT NEW APPROACHES TO ADDRESS TODAY'S COMPLEX ENVIRONMENTAL ISSUES. 'ANTICIPATE AND PREVENT' MUST REPLACE 'REACT AND REPAIR'. WE MUST FOCUS ON THE ROOT CAUSES OF ENVIRONMENTAL PROBLEMS AND AN INTEGRATED, COOPERATIVE APPROACH TO THEIR RESOLUTION.

THE GOVERNMENT OF BRITISH COLUMBIA IS STRENGTHENING ITS MANAGEMENT OF ENVIRONMENTAL ISSUES THROUGH A WIDE VARIETY OF INITIATIVES:

CABINET COMMITTEE ON SUSTAINABLE DEVELOPMENT
CO-CHAIRED BY THE MINISTER OF ENVIRONMENT AND MINISTER OF REGIONAL AND ECONOMIC DEVELOPMENT, THIS COMMITTEE WAS FORMED EARLY IN 1990 TO INTEGRATE THE PRINCIPLES OF SUSTAINABLE DEVELOPMENT INTO GOVERNMENT DECISION MAKING.

B.C. ROUND TABLE ON ENVIRONMENT AND ECONOMY
A PERMANENT 31-MEMBER ADVISORY BODY TO ASSIST GOVERNMENT IN ACHIEVING SUSTAINABLE DEVELOPMENT. ROUND TABLE MEMBERS REPRESENT ENVIRONMENTAL GROUPS, INDUSTRY, LABOUR, LOCAL GOVERNMENTS AND ACADEMIA. THE TASKS OF THE ROUND TABLE INCLUDE:

- DEVELOPING A SUSTAINABLE DEVELOPMENT (LAND USE) STRATEGY FOR B.C.;
- EXAMINING NEW MECHANISMS FOR RESOLVING NATURAL RESOURCE CONFLICTS;
- HEIGHTENING PUBLIC UNDERSTANDING OF SUSTAINABLE DEVELOPMENT; AND ADVISING CABINET ON MECHANISMS FOR REGIONAL AND COMMUNITY PARTICIPATION.

COMMISSIONS AND COMMITTEES

A WIDE VARIETY OF TASK FORCES, STRATEGY GROUPS, ADVISORY COMMITTEES AND INTER-AGENCY AND INTER-MINISTRY BODIES HAVE BEEN SET UP TO ADDRESS ENVIRONMENTAL AND RESOURCE ISSUES, AND DEVELOP AND IMPLEMENT SUSTAINABLE APPROACHES TO DEVELOPMENT.

EXAMPLES INCLUDE THE FOREST RESOURCES COMMISSION, THE CLAYOQUOT SOUND SUSTAINABLE DEVELOPMENT TASK FORCE AND THE FRASER RIVER ESTUARY MANAGEMENT PROGRAM.

ENVIRONMENT 2001

A GOVERNMENT POLICY DOCUMENT IS BEING PREPARED, FOR RELEASE LATER THIS YEAR, WHICH IDENTIFIES AND PRIORIZES CRITICAL ENVIRONMENTAL ISSUES ACROSS MINISTRIES AND ADDRESSES THEM WITH A 10 YEAR GOVERNMENT ACTION PLAN. A PUBLIC CONSULTATION PROGRAM IS BEING DESIGNED TO CREATE A MEANINGFUL DIALOGUE BETWEEN PUBLIC, INDUSTRY, AND GOVERNMENT.

LEGISLATION AND POLICY REVIEW

OUR GOVERNMENT HAS EMBARKED ON A COMPLETE REVIEW OF ENVIRONMENT AND RESOURCE LEGISLATION.

THE OBJECT IS TO ENSURE THAT OUR STATUTORY FOUNDATION IS ADEQUATE TO MEET PRESENT AND FUTURE ENVIRONMENTAL CHALLENGES.

EXISTING POLICIES THAT GUIDE THE ACTIVITIES OF RESOURCE AGENCIES WILL BE REVIEWED TO STRENGTHEN THOSE THAT REFLECT THE PRINCIPLES OF SUSTAINABLE DEVELOPMENT...AND TO REVISE THOSE THAT DO NOT.

THE FINAL OUTCOME OF THIS REVIEW PROCESS WILL BE A BODY OF LEGISLATION SENSITIVE TO THE ENVIRONMENTAL WISHES AND NEEDS OF BRITISH COLUMBIA.

PROJECT ASSESSMENT AND REVIEW PROCESSES

BRITISH COLUMBIA HAS DEVELOPED THREE PROJECT ASSESSMENT AND REVIEW PROCESSES TO ENABLE GOVERNMENT AND INDUSTRY TO WORK TOGETHER TO ASSESS ENVIRONMENTAL AND SOCIAL IMPACT.

POLLUTION CONTROL AND ENFORCEMENT

THE MINISTRY OF ENVIRONMENT HAS SHARPENED ITS FOCUS ON POLLUTION CONTROL AND ENFORCEMENT. TOP PRIORITY IS BEING GIVEN TO CONTROLLING TOXIC CONTAMINANTS SUCH AS PERSISTENT ORGANIC CHEMICALS AND HEAVY METALS.

FOR EXAMPLE, WE HAVE CALLED FOR A SUBSTANTIAL REDUCTION IN PULP MILL CHLORINATED ORGANICS BY THE END OF NEXT YEAR WITH FURTHER REDUCTION BY 1994.

WE HAVE INTENSIFIED MONITORING AND INSPECTION OF WASTE DISCHARGES, AND HAVE BEGUN RELEASING A WASTE PERMIT NON-COMPLIANCE/ POLLUTER LIST SO THAT THE PUBLIC KNOWS WHO ARE B.C.'S WORST POLLUTERS.
MORE CHARGES ARE BEING LAID IN SERIOUS POLLUTION CASES,

POLLUTION FINES HAVE BEEN RAISED FROM A MAXIMUM OF $50,000 TO $3 MILLION IN THE MOST SERIOUS CASES.

SPECIAL ENVIRONMENTAL LEVIES

THE MINISTRY OF ENVIRONMENT IS INTRODUCING "POLLUTER PAY" OR "USER PAY" MEASURES SO THAT THE COST OF ENVIRONMENTAL IMPACTS IS PAID BY THOSE WHO CAUSE THEM, OR BY THOSE WHO USE POLLUTING PRODUCTS.

THE MINISTRY IS LOOKING AT A REGULATION TO APPLY PRO-RATED LEVIES TO HAZARDOUS WASTES AND OTHER WASTE DISCHARGES FROM BOTH INDUSTRY AND MUNICIPALITIES, BASED ON THE QUALITY, QUANTITY AND LEVEL OF ENVIRONMENTAL RISK.

TO ADVANCE THE CAUSE OF DEVELOPING NEW ENVIRONMENTAL INDUSTRIES, AND TO HELP 'MAKE THE CONNECTION' BETWEEN INDIVIDUAL LIFESTYLE CHOICES AND THEIR ENVIRONMENTAL CONSEQUENCES, THE PROVINCIAL GOVERNMENT HAS ESTABLISHED LEVIES ON TIRES, LEAD-ACID BATTERIES, AND DISPOSABLE DIAPERS.

THE REVENUE FROM THESE LEVIES IS BEING PLACED IN A **SUSTAINABLE ENVIRONMENT FUND** ESTABLISHED THIS YEAR BY THE B.C. GOVERNMENT.

THIS FUND, WHICH ALSO BENEFITS FROM LOTTERY FUNDS, IS BEING USED TO AUGMENT SPENDING AMONG MINISTRIES TO PROTECT AND ENHANCE THE ENVIRONMENT, TO SUPPORT ENVIRONMENTAL INITIATIVES AND TO HELP FUND REFORESTATION.

OIL SPILL RESPONSE

THE MINISTRY OF ENVIRONMENT IS DEVELOPING A PROVINCIAL MARINE OIL SPILL PREPAREDNESS AND RESPONSE STRATEGY. TOGETHER WITH THE PROVINCIAL EMERGENCY PROGRAM (P.E.P.), THE MINISTRY HAS ESTABLISHED TWO RESPONSE TEAMS TO DEAL WITH COASTAL OIL SPILLS. TO FURTHER REDUCE THE PROBABILITY OF FUTURE SPILLS, THE PROVINCE WILL BE IMPLEMENTING RECOMMENDATIONS MADE BY THE UNITED STATES/B.C. TASK FORCE ON OIL SPILLS.

ENERGY CONSERVATION

THE PROVINCIAL GOVERNMENT IS ALSO WORKING WITH ELECTRIC AND GAS UTILITIES TO REALIZE THE FULL POTENTIAL FOR ENERGY EFFICIENCY.

E.G.
- ALTERNATE FUELS
- DEMONSTRATION VEHICLES
- WOODWASTE FUELED ELECTRIC POWER PLANTS

MUNICIPAL SOLID WASTE STRATEGY

PERHAPS THE ENVIRONMENT MINISTRY'S BIGGEST PROJECT THIS YEAR IS IMPLEMENTATION OF THE NEW PROVINCIAL STRATEGY FOR CUTTING THE QUANTITIES OF MUNICIPAL SOLID WASTE IN HALF OVER THE NEXT TEN YEARS.

AT THE HEART OF THIS STRATEGY IS A PARTNERSHIP PROGRAM - INVOLVING GOVERNMENT, INDUSTRY AND LOCAL COMMUNITIES - EMPHASIZING RECYCLING, REDUCTION, REUSE AND RECOVERY.

THIS YEAR THE PROGRAM CALLS FOR GOVERNMENT SPENDING ALMOST $15 MILLION TO SUPPORT INITIATIVES IN SEVERAL AREAS, INCLUDING SUPPORTING MUNICIPAL BLUE BOX PROGRAMS TO ENCOURAGE RECYCLING OF HOUSEHOLD GARBAGE, AND AS A MAJOR PART OF THE PROGRAM, THE ENCOURAGEMENT OF THE PRIVATE SECTOR TO DEVELOP AND UTILIZE INNOVATIVE TECHNOLOGY FOR RECYCLING AND RESOURCE RECOVERY. A MAJOR REVIEW OF THE SYSTEM RESPECTING BEVERAGE CONTAINERS IS ALSO UNDERWAY.

HAZARDOUS WASTE CORPORATION

A NEW CROWN CORPORATION HAS BEEN SET UP TO IMPLEMENT A COMPREHENSIVE HAZARDOUS WASTE MANAGEMENT SYSTEM THROUGHOUT THE PROVINCE.

THE PRIORITY IS TO ENCOURAGE INDUSTRY TO REDUCE OR ELIMINATE HAZARDOUS WASTE AT SOURCE, OR RE-USE AND RECYCLE WHENEVER POSSIBLE.

THE CORPORATION WILL ALSO INITIATE A PROCESS TO ESTABLISH ENVIRONMENTALLY SECURE TREATMENT FACILITIES IN THE PROVINCE TO DEAL WITH HAZARDOUS WASTE, INCLUDING THOSE ALREADY IN STORAGE.

INITIATIVES WITHIN GOVERNMENT

FOR ITS PART, THE PROVINCIAL GOVERNMENT IS SETTING AN EXAMPLE THROUGH PROCUREMENT PROGRAMS TO ENSURE THE USE OF RECYCLED PAPER AND RE-REFINED MOTOR OIL WHEREVER POSSIBLE IN GOVERNMENT OPERATIONS AND TO USE ALTERNATE FUELS IN GOVERNMENT VEHICLES.

AT THE MINISTRY OF ENVIRONMENT, WE ARE RESTRUCTURING OUR OPERATIONS TO DEAL MORE EFFICIENTLY WITH OUR AREAS OF RESPONSIBILITY AND MORE EFFECTIVELY WITH INDUSTRY AND THE PUBLIC. THE MINISTRY REORGANIZATION IS IMPROVING MANAGEMENT, STREAMLINING OPERATIONS, AND PUTTING GREATER EMPHASIS ON DECISION MAKING IN OUR REGIONAL OPERATIONS.

CONCLUSION

TRADITIONALLY, GOVERNMENT RESPONSES TO ENVIRONMENTAL ISSUES HAVE BEEN CONSTRAINED BY A NARROW SECTORAL APPROACH.

THE REPORT BY THE WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT CHANGED THIS FOREVER.

TODAY'S COMPLEX ENVIRONMENTAL PROBLEMS REQUIRE AN INTEGRATED RESPONSE FROM GOVERNMENT ... FROM ALL MINISTRIES ... AND ALL PUBLIC AGENCIES.

THE GOVERNMENT OF BRITISH COLUMBIA IS COMMITTED TO A HEALTHY ENVIRONMENT AND A STRONG ECONOMY.

THESE TWO GOALS ARE ENTIRELY COMPATIBLE IF ALL SECTORS WORK TOGETHER TO INTEGRATE ECONOMIC DEVELOPMENT WITH ENVIRONMENTAL MANAGEMENT.

INDUSTRY MUST RECOGNIZE THAT ENVIRONMENTAL COSTS HAVE BECOME A PART OF DOING BUSINESS AND THAT ENVIRONMENT IS VERY MUCH A PART OF CORPORATE RESPONSIBILITY.

GOVERNMENT, IN TURN, RECOGNIZES THAT COERCIVE REGULATIONS, BY THEMSELVES, ARE NO LONGER ADEQUATE.

EFFECTIVE ENVIRONMENTAL MANAGEMENT REQUIRES A COOPERATIVE APPROACH, UTILIZING THE EFFICIENCY AND INNOVATION OF THE MARKETPLACE UNDER THE UMBRELLA OF NECESSARY REGULATIONS.

WE MUST CONTINUE TO WORK TOGETHER TO MAKE THE TRANSITION TO A TRULY SUSTAINABLE ECONOMY.

NEW PARTNERSHIPS AND NEW APPROACHES ARE NEEDED FOR A HEALTHY ENVIRONMENT.

THANK YOU.

BEING RESPONSIBLE PARTNERS IN CANADIAN SOCIETY

PRESENTATION BY

JEAN M. BÉLANGER

PRESIDENT

THE CANADIAN CHEMICAL PRODUCERS' ASSOCIATION

TO

THE AIR AND WASTE MANAGEMENT ASSOCIATION

ENVIRONMENTAL GOVERNMENT AFFAIRS SEMINAR

THE WESTIN HOTEL, OTTAWA
OCTOBER 22, 1990

THANK YOU FOR THE OPPORTUNITY TO TALK TO YOU ABOUT HOW INDUSTRY'S VIEWS ON ENVIRONMENTAL MATTERS HAVE BEEN EVOLVING.

SPECIFICALLY I WANT TO TALK TO YOU ABOUT WHAT THE CHEMICAL INDUSTRY HAS BEEN DOING TO LIVE UP TO ITS RESPONSIBILITY TO SOCIETY, AND HOW THE INITIATIVES WHICH WE CALL RESPONSIBLE CARE COULD BE ADAPTED BY A WIDE RANGE OF INDUSTRIES.

THE CANADIAN CHEMICAL PRODUCERS' ASSOCIATION IS A NATIONAL ORGANIZATION COMPRISING 73 CHEMICAL PRODUCING COMPANIES. THEY RANGE FROM THE LARGEST PRODUCERS IN CANADA TO SOME OF THE SMALLEST, AND AMONG THEM THEY PRODUCE A WIDE RANGE OF PETROCHEMICAL, ORGANIC, INORGANIC AND SPECIALTY CHEMICALS. THE MEMBERS OF THE CHEMICAL INDUSTRY THAT THE CCPA REPRESENTS, EMPLOY AROUND 26 THOUSAND CANADIANS.

I'VE CALLED THIS PRESENTATION "BEING RESPONSIBLE PARTNERS IN CANADIAN SOCIETY" FOR THE VERY REASON THAT THIS IS HOW WE AS AN INDUSTRY SEE OURSELVES; AS PARTNERS WORKING WITH A WIDE RANGE OF GOVERNMENT, COMMUNITY AND ENVIRONMENTAL GROUPS TO ACHIEVE A SOCIETY THAT IS ENVIRONMENTALLY HEALTHY BUT ALSO GLOBALLY COMPETITIVE.

THERES NO QUESTION THAT THERE HAS BEEN A CHANGE IN BUSINESS'S ATTITUDES, AS THERE HAS BEEN IN MANY OTHER SECTORS OF SOCIETY.

THOSE CHANGES MIGHT BE AS CONSPICUOUS AS THE AGGRESSIVE MARKETING OF "GREEN PRODUCTS" OR AS SUBTLE AS SIMPLY CHANGING EVERYDAY OFFICE AND PLANT OPERATING PRACTICES. SOMETIMES THE CHANGES ARE MAJOR, SOMETIMES THEY ARE MINOR AND SOMETIMES THEY DON'T TAKE PLACE AS QUICKLY AS SOME CRITICS MIGHT LIKE.

BUT THERE IS NO DOUBT THAT WHEN IT COMES TO ENVIRONMENTAL ATTITUDES, ANY BUSINESS SECTOR STANDING STILL RISKS BEING RUN OVER BY THE MAJORITY WHO ARE MOVING FORWARD.

THERE ARE MANY PEOPLE IN CANADA WHO SEE THE CHEMICAL INDUSTRY AS 'ENVIRONMENTAL VILLAINS' TAKING NO INTEREST OR RESPONSIBILITY FOR ITS ACTIONS WHEN IT COMES TO PROTECTING THE ENVIRONMENT OR THE HEALTH AND SAFETY OF THOSE AROUND THEM.

WHILE WE FIND THAT SENTIMENT UNFAIR, IT MAY BE THAT SOME OF THE PERCEPTION IS OUR OWN FAULT.

FOR MANY YEARS AFTER ITS INCEPTION IN 1962, THE CCPA FOCUSED ON WORKING DIRECTLY WITH BUREAUCRATS AND POLITICIANS ON THE TECHNICAL ISSUES FACING THE CHEMICAL INDUSTRY.

TO THE GENERAL PUBLIC WE WERE AN "INVISIBLE INDUSTRY".

THAT INVISIBILITY ENDED PRETTY QUICKLY WITH A NUMBER OF HIGH PROFILE INCIDENTS THAT BEGAN WITH THE EXPLOSION OF A CHEMICAL PLANT IN SEVESO ITALY IN 1977. IT WAS AROUND THIS TIME THAT WE AS AN ASSOCIATION BEGAN TO TAKE THE FIRST STEPS TOWARDS WHAT WOULD BECOME OUR RESPONSIBLE CARE INITIATIVES.

WHAT WE DID BACK THEN WAS DEVELOP A SET OF GUIDING PRINCIPLES WHICH WE THOUGHT, AT THE TIME, WOULD BE ADEQUATE TO MEET THE GENERAL PUBLIC'S EXPECTATION OF A RESPONSIBLE CHEMICAL INDUSTRY. THE 7 GUIDING PRINCIPLES SET OUT A BASIC PHILOSOPHY OF CHEMICAL MANAGEMENT STATING THAT COMPANIES WOULD:

- ENSURE THAT OPERATIONS DO NOT PRESENT AN UNACCEPTABLE LEVEL OF RISK TO EMPLOYEES, CUSTOMERS,THE PUBLIC OR THE ENVIRONMENT

- PROVIDE RELEVANT INFORMATION ON THE HAZARDS OF CHEMICALS TO CUSTOMERS, URGING THEM TO USE AND DISPOSE OF PRODUCTS IN A SAFE MANNER, AND MAKE RELEVANT INFORMATION AVAILABLE TO THE PUBLIC.

-INCREASE EMPHASIS ON UNDERSTANDING EXISTING PRODUCTS AND ENSURE THAT THERE IS A HIGH LEVEL OF UNDERSTANDING OF NEW PRODUCTS AND THEIR POTENTIAL HAZARDS THROUGHOUT COMMERCIAL DEVELOPMENT

- COMPLY WITH ALL LEGAL REQUIREMENTS AFFECTING OPERATIONS AND PRODUCTS.

- BE RESPONSIVE AND SENSITIVE TO LEGITIMATE COMMUNITY CONCERNS AND,

- WORK ACTIVELY WITH AND ASSIST GOVERNMENTS AND SELECTED ORGANIZATIONS TO FOSTER AND ENCOURAGE EQUITABLE AND ATTAINABLE STANDARDS.

WHEN THEY WERE PUT TOGETHER MORE THAN 10 YEARS AGO, SIGNING ON TO THE GUIDING PRINCIPLES WAS VOLUNTARY FOR OUR MEMBERS. THE PRINCIPLES ALSO RAN INTO SOME RESISTANCE FROM COMPANY LAWYERS WHO FELT THAT WE MIGHT BE LEAVING OURSELVES VULNERABLE TO LEGAL ACTION. BUT MANY OF OUR COMPANIES COULD SEE THAT IF WE WERE GOING TO BE REGARDED AS A KEY AND RELEVANT INDUSTRY, WE WERE GOING TO HAVE TO SHOW THAT WE WERE TAKING SOME ACTION. THE GUIDING PRINCIPLES WERE SEEN BY US THEN, AS THEY ARE NOW, AS SIMPLE COMMON SENSE; THE STANDARD OF BEHAVIOUR THAT THE PUBLIC EXPECTED OF US AND OTHER BUSINESSES IN THEIR COMMUNITY.

AS TIME WENT ON THERE WERE MORE ENVIRONMENTAL DISASTERS; FOR INSTANCE LOVE CANAL, THE MISSISSAUGA TRAIN DERAILMENT AND BHOPAL.

NEEDLESS TO SAY ALL OF THESE INCIDENTS DID LITTLE TO ENHANCE THE CREDIBILITY OF THE CHEMICAL INDUSTRY. IT DIDN'T MATTER THAT THE ONLY MAJOR DOMESTIC ACCIDENT WAS CAUSED BY A RAILWAY SAFETY PROBLEM AND NOT THE CHEMICALS IN THE TANK CARS THE TRAIN WAS HAULING.

THE ONLY THING THAT MATTERED WAS THAT CANADIANS, LIKE RESIDENTS OF OTHER NATIONS, WERE LOOKING AT US AS THEY SELDOM HAD BEFORE, WONDERING AND WORRYING ABOUT THE EFFECT OUR OPERATIONS WERE HAVING ON THEIR PERSONAL HEALTH AND SAFETY.

WE WENT FROM BEING AN 'INVISIBLE INDUSTRY' TO ONE UNDER A MICROSCOPE. OUR EMPLOYEES FOUND THEMSELVES BEING STIGMATIZED SIMPLY BECAUSE THEY WORKED IN THE CHEMICAL INDUSTRY.

IT WAS OBVIOUS TO MANY OF US THAT PUBLIC CONCERN OVER THE ENVIRONMENT WAS NOT JUST A PASSING FAD, AND THAT WE WERE GOING TO HAVE TO TRY HARDER TO SHOW OUR COMMITTMENT TO THEIR CONCERNS IF WE WERE GOING TO BE SEEN AS A HEALTHY AND RELEVANT BUSINESS IN CANADIAN SOCIETY.

BY THE EARLY TO MID-80S, EVEN BEFORE THAT RASH OF ENVIRONMENTAL PROBLEMS I MENTIONED, WE COULD SEE THAT THE GUIDING PRINCIPLES THAT WE HAD PUT TOGETHER ONLY A FEW YEARS EARLIER WERE NO LONGER ADEQUATE, AND THAT MUCH MORE WAS NEEDED.

IMMEDIATELY AFTER BHOPAL THE ASSOCIATION DECIDED TO TAKE A NUMBER OF STEPS TO FLESH OUR CHEMICAL MANAGEMENT PHILOSOPHY OUT.

WE MADE FORMAL COMMITMENT TO THE GUIDING PRINCIPLES A CONDITION OF MEMBERSHIP.

AT THE SAME TIME, IN ORDER TO ENSURE THAT A BHOPAL LIKE INCIDENT COULD NOT HAPPEN HERE WE ASKED OUR MEMBERS TO CONDUCT SAFETY AUDITS TO DETERMINE HOW WELL EQUIPPED THEY WERE TO HANDLE EMERGENCIES ON AND OFF THEIR SITES. THE RESULTS WERE EVALUATED BY ONE TASK FORCE WITH AN EYE TO HELPING COMPANIES IMPROVE IN AREAS WHERE THEY MIGHT BE WEAK.

WE SET UP ANOTHER TASK FORCE TO LOOK AT THE WHOLE AREA OF OUR RESPONSIBILITY. IT CAME BACK WITH A RECOMMENDATION TO SET UP A MANAGEMENT SYSTEM SUCH AS THE ONE WE NOW HAVE IN PLACE. A YEAR LATER WE SET UP MORE TASK FORCES MADE UP OF SOME OF THE BEST PEOPLE IN OUR INDUSTRY, WHO WERE GIVEN TIME AWAY FROM THEIR REGULAR JOBS TO TACKLE THE TASK OF WRITING THE ACTUAL CODES OF PRACTICE.

BY 1986 WE WERE WELL ON THE WAY TOWARDS STRUCTURING ALL OF THE ELEMENTS OF THE RESPONSIBLE CARE INITIATIVES WE NOW HAVE.

BEFORE I GO ANY FURTHER, LET ME EXPLAIN WHAT RESPONSIBLE CARE IS.

THE INITIATIVE COMPRISES SIX COMPREHENSIVE CODES OF PRACTICE WITH TWO SUPPORTING POLICIES, A CHEMICAL REFERRAL CENTRE, AND A PUBLIC ADVISORY PANEL. THE CODES SET OUT BASIC STRATEGIES FOR COMPANIES GOVERNING COMMUNITY AWARENESS AND EMERGENCY RESPONSE, RESEARCH AND DEVELOPMENT, MANUFACTURING, TRANSPORTATION, DISTRIBUTION, AND MANAGEMENT OF HAZARDOUS WASTE.

THE CODES COVER EVERY ASPECT OF A PRODUCT'S LIFECYCLE, FROM BEFORE THE PRODUCT IS DEVELOPED IN THE LABORATORY OR A SHOVEL PUT IN THE GROUND FOR A NEW FACILITY, TO THE TIME WHEN THE PRODUCT OR PLANT IS ULTIMATELY DISPOSED OF OR DEMOLISHED.

ALL OF THESE CODES REQUIRE THAT COMPANIES HAVE WRITTEN POLICIES, PROGRAMS AND PROCEDURES DEALING WITH ALL ASPECTS OF THEIR OPERATIONS. STANDARDS FOR THE PROTECTION OF PEOPLE AND THE ENVIRONMENT ARE CLEARLY SPELLED OUT. PROPER TRAINING IS REQUIRED FOR ALL EMPLOYEES, EVEN IF THEY DO NOT WORK FOR THE MEMBER COMPANY ITSELF, BUT ARE EMPLOYED BY A CONTRACTED COMPANY.

NO CHEMICAL IS TO BE DISTRIBUTED OR SOLD IF PROCEDURES FOR DOING SO CAN'T MEET THE REQUIREMENTS OF THE CODES. SOME OF OUR COMPANIES HAVE CUT OFF CUSTOMERS WHO HAVE BEEN UNABLE TO HANDLE OR DISPOSE OF A PRODUCT IN A WAY THAT LIVES UP TO THE CODE REQUIREMENTS.

THERE ARE REQUIREMENTS FOR REDUCTION, RE-USE AND RECYCLING OF PRODUCTS OR BY-PRODUCTS FROM OUR PROCESSES WHERE EVER THAT IS POSSIBLE.

UNDER THE COMMUNITY AWARENESS AND EMERGENCY RESPONSE CODE, COMPANIES ARE EXPECTED TO BE SENSITIVE TO COMMUNITY CONCERNS ABOUT OUR PROCEDURES AND PROCESSES AND PROVIDE INFORMATION ABOUT THE HAZARDS AND ASSOCIATED RISKS TO PEOPLE OR GROUPS WHO HAVE AN INTEREST.

THEY ARE EXPECTED TO COMMUNICATE REGULARILY WITH CIVIC OFFICIALS AND LOCAL GROUPS THAT MIGHT HAVE AN INTEREST IN THEIR OPERATIONS. A NUMBER OF OUR MEMBER COMPANIES HAVE HELD "TOWN HALL" TYPE MEETINGS WHEN THEY PLANNED A NEW FACILITY. THIS WAY LOCAL CITIZENS COULD SEE THE PLANS AND VOICE THEIR OPINIONS.

THE COMPANIES ALSO HELP EACH OTHER. THE CHIEF EXECUTIVE OFFICERS OF OUR MEMBER COMPANIES HAVE THEIR OWN NETWORK FOR DISCUSSING WHERE THEY ARE GOING WITH RESPONSIBLE CARE, AND TO TRADE ADVICE AND INFORMATION.

THEY MEET FORMALLY A NUMBER OF TIMES EACH YEAR, AND WORK TOGETHER INFORMALLY YEAR-ROUND TO ESTABLISH COMPANY LINKS AND SUPPORT. THIS WAY WE HOPE TO SHOW THAT RESPONSIBLE CARE HAS MORE THAN JUST THE APPROVAL OF THE TOP COMPANY OFFICERS; IT HAS THE ACTIVE PARTICIPATION OF THOSE AT THE HIGHEST CORPORATE LEVELS.

ALL OF THE CODES WERE CAREFULLY SCRUTINIZED BY A PUBLIC ADVISORY PANEL MADE UP OF PEOPLE INVOLVED IN HEALTH AND THE ENVIRONMENT AT THE COMMUNITY LEVEL. I SHOULD ADD THAT THIS PUBLIC CONSULTATION PROCESS WAS ANYTHING BUT A RUBBER STAMP. THIS PANEL, WHICH IS STILL IN EXISTENCE TO GIVE US ADVICE, TAKES ITS RESPONSIBILITIES VERY SERIOUSLY AND WENT OVER THE CODES METICULOUSLY.

UNDERLYING ALL OF THE CODES IS THE BASIC BELIEF THAT THE PUBLIC HAS A RIGHT TO KNOW WHAT WE ARE DOING AND HOW IT MIGHT AFFECT THEM.

ALL OF THIS IS A MARKED CHANGE FROM THE WAY OUR BUSINESS, AND BUSINESS IN GENERAL, HAS INTERACTED WITH THE GENERAL PUBLIC IN PREVIOUS DECADES.

MANY COMPANIES ARE NOW OPENING UP THEIR FACILITIES TO THE PUBLIC IN WAYS THEY NEVER DID BEFORE; IN WAYS LIKE COMMUNITY OPEN HOUSES AND SCHOOL TOURS.

WHERE COMPANIES ONCE FELT THAT THE PUBLIC WOULD NEVER BE ABLE TO UNDERSTAND WHAT THEY DO, THEY NOW SEE THAT PEOPLE ARE INTERESTED, AND THAT KNOWLEDGE CAN LEAD TO BETTER UNDERSTANDING AND CO-OPERATION.

I MENTIONED THE TOWN HALL MEETINGS THAT COMPANIES HAVE HELD TO UNVEIL THEIR PLANS. THOSE COMPANIES ARE THERE TO HEAR EVERYONE'S OPINION, FOR AND AGAINST, IN AN EFFORT TO ENSURE THAT THERE IS TOTAL UNDERSTANDING OF THEIR PLANS AND PROCESSES.

THE EVOLUTION IN PEOPLE'S AWARENESS CAN ALSO BE SEEN IN THE CHANGES THAT TOOK PLACE BETWEEN THE WRITING OF THE GUIDING PRINCIPLES AND THE CODES OF PRACTICE.

THE GUIDING PRINCIPLES WERE DRAWN UP AT A TIME WHEN CAUTION WAS STILL THE WATCHWORD. WE HAD TO CRAFT THEM TO BE RELEVANT, BUT ALSO SATISFY ALL OF OUR MEMBERS.

BY THE TIME OUR TASK FORCE TEAMS BEGAN WRITING THE ACTUAL CODES, THE LANGUAGE WAS MUCH STRONGER AND THERE COULD BE NO DOUBT AS TO THE KIND OF BEHAVIOUR THAT WAS EXPECTED OF MEMBER COMPANIES.

THERE WAS ALSO THE DECISION TO SUBJECT THE CODES TO THE PUBLIC ADVISORY PANEL. NOT ONLY WERE THE COMMENTS OF THIS DIVERSE GROUP OF NON-INDUSTRY PEOPLE LISTENED TO, THEIR IDEAS WERE INCORPORATED INTO THE CODES THEMSELVES.

THE PROCESS HAS BEEN EXPENSIVE AND TIME CONSUMING, BUT WE ARE CONFIDENT THAT WHAT WE HAVE IN PLACE NOW ADDRESSES MANY OF THE PUBLIC'S CONCERNS ABOUT THE ENVIRONMENT, HEALTH AND SAFETY.

RESPONSIBLE CARE IS OUR WAY OF ADDRESSING OUR SOCIAL RESPONSIBILITY: NOT ONLY TO OUR EMPLOYEES AND THE COMMUNITY, BUT ALSO TO SOCIETY AS A WHOLE.

THE CODES WERE DEVELOPED BETWEEN 1986 AND 1989 AND ARE NOW BEING IMPLEMENTED. WE EXPECT THAT THEY WILL BE FULLY IMPLEMENTED BY 1993.

IN THE MEANTIME WE CAN GAUGE HOW QUICKLY COMPANIES ARE MEETING THEIR OBLIGATIONS BY CHECKING THEIR PROGRESS AGAINST A SERIES OF MILESTONES THAT THEY HAVE COMMITTED TO. THESE MILESTONES SET OUT THE VARIOUS STAGES OF IMPLEMENTATION FOR EACH CODE.

AS I MENTIONED A FEW MINUTES AGO, THE DEVELOPMENT AND IMPLEMENTATION OF AN ENVIRONMENTAL MANAGEMENT PROGRAM LIKE OURS IS TIME CONSUMING AND EXPENSIVE.

FOR OUR MEMBERS IT MEANT A SIGNIFICANT INCREASE IN THEIR FEES TO THE ASSOCIATION AS WELL AS SIGNIFICANT COSTS WITHIN THEIR OWN ORGANIZATIONS IN TERMS OF MANPOWER AND CAPITAL INVESTMENT.

BUT WE KNEW IT HAD TO BE DONE.

WE KNEW IT EVEN BEFORE WE COMMISSIONED A DECIMA POLL IN 1986 TO FIND OUT WHAT CANADIANS THOUGHT OF OUR INDUSTRY. IT TURNS OUT THAT THEY DIDN'T THINK VERY HIGHLY OF US AT ALL.

WHILE THEY COULD SEE THE VALUE OF THE PRODUCTS WE PRODUCE, THEY FELT THAT WE WERE PUTTING THEIR HEALTH AND SAFETY AT RISK; THAT WE KNEW ABOUT THE HAZARDS OF OUR OPERATIONS BUT WEREN'T TELLING THEM. IN SHORT, THEY FELT THAT WE DIDN'T CARE ABOUT THEM.

THIS IS HARDLY THE KIND OF PERCEPTION AN INDUSTRY WANTS HANGING OVER IT. COUPLE MISTRUST WITH A GROWING PUBLIC BELIEF THAT ENVIRONMENTAL LAWS AND REGULATIONS ARE TOO LAX AND YOU CAN SEE THAT AN INDUSTRY LIKE OURS COULD SUDDENLY FIND ITSELF THE TARGET OF HARSH AND PERHAPS UNMANAGEABLE RESTRICTIONS.

THIS IS NOT TO SAY THAT REGULATIONS AND LAWS DON'T HAVE A PLACE. WE FULLY UNDERSTAND AND AGREE WITH THE NEED FOR GOVERNMENT POLICIES AND RESTRICTIONS.

HOWEVER WE STRONGLY BELIEVE THAT THE GOALS OF OUR MULTI-OBJECTIVE SOCIETY ARE BEST MET BY MEANINGFUL CONSULTATION WHERE ALL INTERESTED SECTORS OR GROUPS ARE HEARD AND THEIR VIEWS CONSIDERED. LITTLE WILL EVER BE ACCOMPLISHED BY SUBJECTING EACH OTHER TO RHETORIC, DOGMATIC POSITIONS AND UNILATERAL DECISION MAKING.

THATS WHY WE HAVE BEEN ACTIVE PARTICIPANTS IN RECENT DISCUSSIONS DEALING WITH THE GREEN PLAN, THE CANADIAN ENVIRONMENTAL PROTECTION ACT, AND NUMEROUS PROVINCIAL INITIATIVES DEALING WITH WORKPLACE SAFETY, HAZARDOUS WASTE QUESTIONS AND OTHER ENVIRONMENTAL MATTERS.WE KNOW THAT EVERYONE IS NOT ALWAYS GOING TO SEE EYE TO EYE ON AN ISSUE. HOWEVER WE HAVE ALSO FOUND THAT OFTEN WHEN YOU BRING MANY DIFFERENT GROUPS TOGETHER, THEY OFTEN FIND THEY HAVE THE SAME ULTIMATE GOAL, EVEN IF THEY DON'T AGREE ON THE PROCESS OF ACHIEVING THAT END.

IN ORDER TO REMAIN A RELEVANT INDUSTRY THAT WOULD BE CONSULTED AND TAKEN SERIOUSLY, WE KNOW THAT WE HAVE TO SHOW WE ARE SERIOUS ABOUT GETTING OUR OWN AFFAIRS IN ORDER.

IF THERE ARE FLAWS IN OUR OPERATIONS, WE MUST SHOW THAT WE CAN CONTROL THEM.

IF PEOPLE HAVE LEGITIMATE FEARS ABOUT OUR OPERATIONS, WE HAVE TO SHOW THAT WE ARE AWARE OF THAT AND DOING SOMETHING ABOUT IT.

SIMPLY MAKING THE PRODUCTS OUR CUSTOMERS WANT AND DEFENDING OUR ACTIONS ON ECONOMIC GROUNDS ISN'T GOOD ENOUGH. PEOPLE WANT AN ASSURANCE THAT WE AREN'T PUTTING THEIR HEALTH AND THE HEALTH OF THEIR LOVED ONES AT RISK.

BUT THERE IS MORE BEHIND RESPONSIBLE CARE THAN FEAR OF PUNITIVE GOVERNMENT MEASURES OR BEING SHUT OUT OF IMPORTANT CONSULTATIONS.

AS I'VE MENTIONED OUR MEMBERS DIRECTLY EMPLOY ABOUT 26 THOUSAND PEOPLE. THAT'S 26 THOUSAND PEOPLE WHO HAVE THE SAME CONCERNS ABOUT THE HEALTH AND SAFETY OF THEIR FAMILY AND SURROUNDINGS AS ANYONE ELSE IN THEIR COMMUNITY.

THE PEOPLE WHO WORK IN OUR MEMBER COMPANIES, FROM THE CHIEF EXECUTIVE OFFICER ON DOWN, DRINK THE SAME WATER AND BREATHE THE SAME AIR AS EVERYONE ELSE. THEY HAVE THE SAME CONCERNS ABOUT THE FUTURE OF THEIR CHILDREN AND MANY CONSIDER THEMSELVES TO BE AS ENVIRONMENTALLY CONSCIOUS AS ANYONE ELSE. THEY CAN SEE THE BENEFITS OF MAINTAINING ENVIRONMENTAL HEALTH AND PUBLIC SAFETY WHILE ENSURING THAT WE REMAIN COMPETITIVE IN AN INCREASINGLY GLOBAL ECONOMY.

THE ATTITUDE OF OUR MEMBER COMPANY EMPLOYEES IS ONE REASON THAT RESPONSIBLE CARE IS WORKING. AN INITIATIVE LIKE THIS CANNOT BE SUCCESSFUL WITHOUT THE CO-OPERATION OF EVERYONE CONCERNED, AND OUR MEMBER'S EMPLOYEES HAVE SHOWN DEDICATION IN NOT ONLY IMPLEMENTING THE CODES, BUT IN FINDING NEW WAYS TO MAKE THE CONCEPT WORK.

RESPONSIBLE CARE IS MORE THAN SIMPLY CHANGING MANAGEMENT AND OPERATING PRACTICES. IT INVOLVES CHANGING ENTIRE CORPORATE ATTITUDES; THE WAY PEOPLE THINK ABOUT HOW THEY DO THEIR JOB AND HOW THEY FIT INTO THE COMMUNITY THEY WORK IN.

IT IS SOMEWHAT IRONIC THAT THE MORE SUCCESSFUL RESPONSIBLE CARE IS, THE LESS LIKELY PEOPLE ARE TO KNOW IT. IT IS THE NATURE OF NEWS TODAY THAT PEOPLE USUALLY ONLY HEAR ABOUT THINGS WHEN SOMETHING GOES WRONG; IN THE CASE OF OUR INDUSTRY, A LEAK, A SPILL OR A TRANSPORTATION INCIDENT. IF THESE THINGS DON'T HAPPEN, IT MEANS WE ARE DOING SOMETHING RIGHT.

WE FEEL WE ARE ON THE RIGHT TRACK AND THAT WE ARE DOING THE RIGHT THINGS, BUT WE HAVE TO CONVINCE THE PUBLIC OF THAT. IN ORDER TO ACCOMPLISH THAT, WE KNOW THAT WE WILL HAVE TO BE MORE OPEN AND COMMUNICATE BETTER THAN WE HAVE IN THE PAST.

ONE WAY WE WILL TRY TO DO THIS IS BY ESTABLISHING CRITERIA AGAINST WHICH OUR MEMBER COMPANIES CAN BE MEASURED IN TERMS OF MEETING THEIR OBLIGATIONS UNDER RESPONSIBLE CARE. MONITORING WILL BE DONE ON A REGULAR BASIS AND THE RESULTS MADE PUBLIC.

IN ADDITION TO THE MEASURING CRITERIA WE ARE DEVELOPING THE MEANS BY WHICH COMPANIES CAN BE EXPELLED FROM THE ASSOCIATION FOR CHRONIC FAILURE TO MEET THEIR OBLIGATIONS.

THIS WOULD BE DONE AS A LAST RESORT SINCE WE FEEL IT IS BETTER TO HELP A STRUGGLING COMPANY FROM WITHIN RATHER THAN CUT IT LOOSE TO CONDUCT ITS BUSINESS WITH NO HELP AT ALL. NEVER THE LESS OUR MEMBER COMPANIES ARE FULLY PREPARED TO SHOW THAT THEY ARE SERIOUS ABOUT HAVING EVERY COMPANY LIVE UP TO ITS OBLIGATIONS.

THE CODES OF PRACTICE ARE INITIATIVES THAT HAVE BEEN DEVELOPED TO MEET THE NEEDS OF THE CHEMICAL INDUSTRY BUT THEY ARE BY NO MEANS EXCLUSIVE TO OUR MEMBERS ALONE.

WE THINK THAT THE BASIC CONCEPT COULD BE ADAPTED TO THE NEEDS OF MANY DIFFERENT INDUSTRIES.

THAT IS ALREADY BEGINNING TO HAPPEN TO A CERTAIN DEGREE. IN OUR INDUSTRY, CHEMICAL ASSOCIATIONS IN THE UNITED STATES, BRITAIN, FRANCE, THE NETHERLANDS, AUSTRALIA AND NEW ZEALAND ARE ALL USING RESPONSIBLE CARE AS A MODEL FOR THEIR OWN INITIATIVES.

THIS INDICATES TO US THAT THE ATTITUDE CHANGES ARE HAPPENING IN MANY OTHER COUNTRIES AS WELL. A NUMBER OF NON-CHEMICAL INDUSTRY ASSOCIATIONS IN CANADA HAVE ALSO LOOKED AT OUR INITIATIVES IN THE CREATION OF THEIR OWN PROGRAMS, AND A NUMBER OF GROUPS OUTSIDE THE CHEMICAL INDUSTRY HAVE INQUIRED ABOUT BECOMING "PARTNERS" IN RESPONSIBLE CARE.

SLOWLY BUT SURELY, BUSINESS HAS BEEN REALIZING THAT IT CANNOT ACT IN A VACCUUM.

PUBLIC CONCERN MAY NOT ALWAYS BE BASED ON FACT OR LOGIC, BUT THE VERY FACT THAT THOSE CONCERNS EXIST, MEANS THAT THEY WILL HAVE TO BE CONSIDERED BY BUSINESS AND GOVERNMENTS AT ALL LEVELS.

I HASTEN TO ADD THOUGH THAT THE PROBLEMS WE FACE REQUIRE CAREFUL CONSIDERATION AND CONSULTATION BASED ON SCIENTIFIC FACT THAT WILL HELP US RESPOND IN THE MOST APPROPRIATE WAY.

THERE ARE SOME ENVIRONMENTALISTS WHO WOULD LIKE TO SEE THE ENTIRE CHEMICAL INDUSTRY STOP MAKING THOSE PRODUCTS THAT THEY DEEM TO BE A PROBLEM, OR SHUT DOWN ALTOGETHER.

OBVIOUSLY THIS IS NOT A VERY REALISTIC SOLUTION TO OUR PROBLEMS. ONE COURSE OF ACTION WOULD MEAN THE LOSS OF TENS OF THOUSANDS OF DIRECT JOBS AND MANY THOUSANDS MORE INDIRECT JOBS.

OTHER SOLUTIONS WOULD BE IGNORING THE REALITY THAT MANY OF THE PRODUCTS MADE BY INDUSTRY TODAY ARE ESSENTIAL TO OUR WAY OF LIFE. WE KNOW THAT SOME OF OUR PRODUCTS ARE NOT AS ENVIRONMENTALLY FRIENDLY AS WE WOULD LIKE, BUT ARE WORKING TO FIND ALTERNATIVES.

WE ARE ALSO WORKING TO ENSURE THAT DANGEROUS PRODUCTS ARE HANDLED AND DISPOSED OF SAFELY. WE HAVE LEARNED FROM PAST MISTAKES AND WANT TO ENSURE THAT THEY ARE NOT REPEATED.

ONE OF THE PROBLEMS WE FACE THESE DAYS IN WORKING WITH DIFFERENT GROUPS TOWARDS A COMMON SOLUTION TO OUR PROBLEMS, IS THE WIDELY VARYING AGENDAS THAT EXIST IN THE PUBLIC.

DAVID BUZZELLI, THE FORMER PRESIDENT OF DOW CANADA AND NOW THE VICE-PRESIDENT IN CHARGE OF ENVIRONMENTAL MATTERS WORLDWIDE FOR DOW, RECENTLY DESCRIBED THE NORTH AMERICAN ENVIRONMENTAL SCENE AS BEING IN A STATE OF GRIDLOCK.

BY THIS HE MEANT THAT DIFFERENT GROUPS--WHETHER THEY BE POLITICIANS, THE PUBLIC AND PUBLIC INTEREST GROUPS OR INDUSTRY--ARE LIKE DRIVERS AT A RUSH HOUR INTERSECTION, EACH PUSHING FORWARD IN THEIR OWN DIRECTION UNMINDFUL OF OTHER'S CONCERNS OR INTERESTS.

WE MUST ENSURE THAT THIS GRIDLOCK DOESN'T PARALYSE US. WE MUST ALL TRY TO BE PART OF THE SOLUTION AND MAKE SURE WE ARE NOT JUST MAKING OUR PROBLEMS WORSE.

I'M NOT GOING TO PRETEND THAT RESPONSIBLE CARE IS THE ANSWER TO ALL OF THE PROBLEMS THAT FACE US; OBVIOUSLY IT CAN'T BE. THERE WILL LIKELY ALWAYS BE PEOPLE AND COMPANIES WHICH POLLUTE, SPECIAL INTEREST GROUPS THAT REFUSE TO CONSIDER ANY OPINION OTHER THAN THEIR OWN, AND POLITICIANS WHO CAST POLICY WITHOUT FULLY CONSIDERING THE IMPACT. THAT IS THE REALITY OF HUMAN NATURE.

BUT HAVING SAID THAT, WE THINK THAT ENORMOUS PROGRESS CAN BE MADE BY WORKING TOGETHER TO SOLVE THE PROBLEMS IN A TIMELY, RATIONAL WAY THAT PROTECTS PEOPLE AND THE ENVIRONMENT WHILE MAINTAINING OUR COMPETITIVENESS.

THROUGH RESPONSIBLE CARE, WE FEEL WE ARE SHOWING OUR EAGERNESS TO BE AN EQUAL, RESPONSIBLE PARTNER IN CANADIAN SOCIETY, AND I KNOW THAT THERE ARE MANY OTHER BUSINESSES, POLITICIANS, GROUPS AND PRIVATE CITIZENS WHO FEEL THE SAME WAY.

THE TASK FOR ALL OF US NOW IS TO ENSURE THAT WE TRY TO BRING ALONG THOSE WHO MIGHT NOT HAVE THE SAME DEDICATION TO THE PROCESS THAT MANY OF US DO AND ENSURE THAT WE ARE ALL TRULY WORKING AS PARTNERS TO PRESERVE A STRONG, HEALTHY FUTURE.

THANK YOU

"ENVIRONNEMENT ET DÉVELOPPEMENT DANS LE TIERS-MONDE: UN DÉFI ET UN NOUVEAU PARTENARIAT POUR LES CANADIENS"

Notes pour une allocution de
Gilles Lamoureux, ing, M. Ing,
Directeur général, Environnement,
Agence canadienne de développement international.

Sixième colloque des affaires gouvernementales
canadiennes sur l'environnement,
Association pour la prévention de la contamination de
l'air et du sol.

Ottawa, Ontario
22 octobre, 1990

TITRE DE LA CONFÉRENCE: "Les attitudes changeantes envers l'environnement dans les années 1990"

THEME DE LA JOURNÉE: "Quelles sont les priorités?"

SUJET PROPOSÉ:"Environnement et développement dans le Tiers-Monde: un défi et un nouveau partenariat pour les canadiens"

Mesdames, messieurs, bonjour,

Il me fait grand plaisir de participer à ce 6ième colloque des Affaires gouvernementales sur l'environnement parrainé par l'Association pour la prévention de la contamination de l'air et du sol. Je crois que l'Association a fait preuve d'une grande sagesse en plaçant au programme une première session intitulée "Quelles sont les priorités?". En fait, le dossier environnement est d'une telle actualité que les actions risquent d'être tout azimut et ce faisant, risquent de masquer l'essentiel. D'autre part, c'est avec satisfaction que je constate que l'on inclut de plus en plus fréquemment les questions de développement des pays du Tiers-Monde dans la recherche de solutions à la dégradation de l'environnement. C'est certainement là un signe encourageant. En fait, nous ne pouvons envisager l'établissement d'un modèle de développement durable et respectueux de l'environnement si on exclut les deux tiers de la population mondiale dans l'élaboration de ces solutions. Le mode de développement des pays en voie de développement risque d'avoir des impacts qui se répercuteront à l'échelle de l'écosystème de la planète et qui viendront s'ajouter aux répercussions environnementales des pays industrialisées. Pour certains des enjeux, tels les changements climatiques, la contribution potentielle de certains pays en développement risque même de neutraliser l'effort des pays industrialisés. Les solutions que nous envisageons doivent donc présenter les moyens pour aider les pays en développement à régler leurs problèmes environnementaux et à minimiser leur potentiel de contribution aux enjeux mondiaux.

I hope that you will be sympathetic to the fact that it is always difficult for a bureaucrat to talk about the policy implications of a specific issue. So I have decided to alter somewhat the title of my remarks from "The Impact of Third World Development on Canadian Policy" to "Environment and Development in the Third World: A Challenge and New Partnership Opportunities For Canadians". I hope that after my exposé you will be in a better position to assess the significance for your own sphere of activities, set your own priorities and hopefully understand those of the government. Allow me to first talk about some of the hard realities faced by most Third World countries.

Nous constatons que pour une des premières fois de l'histoire de l'humanité, nous avons, à l'échelle planétaire, un intérêt commun, une cause commune: la préservation et l'amélioration des bases écologiques dont notre survie dépend. Cette cause fait place à un extraordinaire défi qui nous appelle tous à: **instaurer un modèle de développement durable qui permettra à toutes les nations d'avoir les ressources suffisantes pour préserver efficacement l'écosystème dont dépend leur économie, leur bien-être et leur survie.** The debate is no longer about "zero growth". It is about the nature and rate of growth. It is about equity and justice. And sustainable development is the best available development concept that we currently have.

Les pays en développement ont besoin comme nous de se doter d'un modèle de développement. Mais leur manque de ressource, la croissance démographique très élevée et la pauvreté de leur population les empêchent d'établir les bases d'un tel modèle. Ce défi d'instaurer un développement durable impose le développement d'un nouveau partenariat avec les pays du Tiers-Monde. Et nous nous devons de développer ce partenariat à travers nos politiques, à travers notre engagement individuel et à travers nos entreprises. C'est ce partenariat qui permettra aux pays en développement de combattre la cause centrale de la dégradation de leur environnement: soit la pauvreté. Car en effet, la pauvreté illustre probablement le mieux le lien étroit qui unit les questions de développement et les questions d'environnement.

PAUVRETÉ ET ENVIRONNEMENT

La pauvreté ne donne pas de choix aux populations des pays en développement. La survie est souvent le seul objectif des gens, ce qui les contraint à opter pour des solutions à court terme. Faute de bois de chauffe par exemple, les habitants sont forcés de prélever directement les arbres des forêts. Faute de nourriture, on surexploite les terres défrichées ou on défriche des terres fragiles, ce qui entraînent une érosion des sols puis souvent la désertification. La pauvreté force les familles à être plus nombreuses afin que les enfants puissent augmenter le revenu familial. La croissance démographique atteint donc des niveaux insoutenables et augmente la pression sur les ressources naturelles; les forêts sont coupées, les terres surexploitées, il y a encore érosion et le cycle recommence.

The poverty of populations is compounded by that of the governments which, facing high external debts have no choice but to drastically reduce public expenditures. And to generate foreign currencies, governments often decide to leave aside long term considerations in favour of development that result in overexploitation of their natural resource base thus further degrading their soils and forests. Furthermore, because environmental protection is often considered as a long term objective public expenditures in that sector are minimal. Allow me to illustrate the situation.

D'une part, la dégradation de ressources naturelles de base présente un potentiel dévastateur inédit. En matière de forêts par exemple, le FAO estime que la surface des forêts tropicales a diminué d'environ 50% au cours des cinquante dernières années. Dans les tropiques, 10 arbres sont coupés pour 1 arbre planté. En Afrique le ratio est de 29 pour 1. Au Canada le taux est de 3 pour 1.

Les conséquences de la destruction de ces écosystèmes sont énormes. Près de 20% de l'augmentation de gaz carbonique dans l'atmosphère est associée à la destruction des forêts tropicales. Non seulement ces forêts ont un grand rôle à jouer dans le recyclage du gaz carbonique en oxygène mais il y recèle une quantité extraordinaire de ressources qui pourraient être d'un grand secours dans le développement de nombreux pays. Plus de 50% des médicaments ont été découverts à partir des plantes tropicales. Un kilomètre de forêt tropicale au Panama par exemple contient plus d'espèces que toute l'Angleterre. L'extinction de ces espèces nous privera non seulement de médicaments et de nourriture qui n'ont pas encore été découverts mais réduira aussi dangereusement la base génétique dont dépend l'agriculture moderne. La plupart des denrées alimentaires dans les pays développés comme les céréales, le blé, le soya, le riz sont dérivés des ressources génétiques d'Afrique, d'Asie et d'Amérique Latine. Notre habileté à faire des croisements pour augmenter la productivité et la résistance aux insectes nuisibles et aux maladies sera menacée par la réduction de la diversité génétique. Je pourrais faire une description du même genre pour ce qui est de la qualité des sols et des eaux.

But the quality of the natural resources base is only one side of the story. In some countries (such as in South-East Asia and Eastern Europe) urbanization has fostered high levels of industrial activities. There, we are witnessing gross environmental pollution of the kind we started to address in the late 50's and 60's. And, given the concentration of the population, I need not elaborate on the health, social and economic significance of such conditions.

Cette sévère détérioration de l'environnement des pays en développement et les répercussions qui se font sentir au niveau mondial, nous font découvrir les liens qui nous unissent comme habitant de cette planète. Derrière cette crise environnementale, se présente un défi extraordinaire. Un défi qui nous appelle à augmenter notre collaboration et notre partenariat dans cette cause commune qui est la conservation et l'amélioration de notre environnement par la voie d'un développement durable. Mais plusieurs s'interrogent à savoir comment donner forme à ce nouveau partenariat avec les pays en développement. Le domaine de l'éducation, les programmes environnementaux, les pratiques commerciales et les entreprises sont autant d'outils qui pourront stimuler et réaliser ce nouveau partenariat avec les pays en développement.

POLITIQUE D'ÉDUCATION

Tous conviendront que les programmes d'éducation jouent un rôle fondamental pour intégrer une meilleure protection de l'environnement aux considérations plus globales de développement durable. Il devient extrêmement important de promouvoir une éducation environnementale qui présente la réalité "environnement et développement" des pays du Tiers-Monde par le biais des médias, des programmes institutionnels dans nos écoles publiques et des organisations comme l'Association pour la prévention de la contamination de l'air et du sol.

POLITIQUE ENVIRONNEMENTALE CANADIENNE

Les trois quarts des émissions de gaz carbonique et la majorité des émissions toxiques proviennent des pays industrialisés. D'autre part, le taux de déforestation des pays occidentaux n'a pas diminué de façon significative. Il est donc délicat pour une agence comme l'ACDI de demander aux pays en développement, étouffés par une dette astronomique et une pauvreté endémique, de réduire, par exemple, leurs émissions toxiques et leur déforestation. Il s'avère donc prioritaire que nous adoptions dans les pays industrialisés des modèles nouveaux de développement où la conservation et la gestion des ressources feront partie intégrante de notre développement économique et social. Nous pourrions avoir un modèle exemplaire qui puisse inspirer les pays en développement dans l'élaboration de leur cadre de gestion environnementale. But what matters most is that our domestic environmental performance be comparable to the reputation Canada enjoys internationnaly with respect to the protection of its environment. In short, individually and collectively we will have to practice domestically what we preach internationally if we want to have any form of credibility. Let me now briefly turn to commercial activities.

PRATIQUES COMMERCIALES

La dégradation de l'environnement des pays en développement prend racine dans la pauvreté, c'est donc là que nous devons chercher des solutions. Pour que la pauvreté se résorbe et qu'ultimement l'environnement soit protégé, il est essentiel que les pays en développement puissent augmenter leurs sources de revenu par le commerce international et par un plus grand investissement étranger dans leur pays. L'instauration de nouveaux modèles de relations commerciales avec nos partenaires des pays en développement serait donc une avenue à explorer. Un meilleur accès à nos marchés, une réduction des dettes banquaires et une augmentation du crédit sont des voies qui méritent de plus amples considérations. Car rappelons le, les problèmes environnementaux mondiaux peuvent en effet être annonciateurs d'un sombre avenir mais peuvent aussi amener une ère de collaboration et d'union dans notre développement. Our economic and environmental interdependence will command the emergence of a new economic partnership with the developing countries. I suspect we will witness the emergence of environment in negotiations at the various international trade fora. When it happens, it will give to the expression: "environment-economy" a totally new significance. Now let me turn to business and technology.

ENTREPRISE ET TECHNOLOGIE

Les solutions aux problèmes environnementaux devront nécessairement passer par la formulation de politiques qui tiennent compte du développement viable des pays du Tiers-Monde. Ces politiques ne seront cependant que des coquilles vides sans la participation de ce que j'appellerai les "prospecteurs de solutions technologiques aux problèmes environnementaux". Car, si l'industrie et la technologie ne sont pas étrangères à la dégradation de l'environnement, elles peuvent également nous apporter des solutions. La notion de développement durable a désespérément besoin d'une force organisatrice, d'une intelligence puissante, capable de lui donner forme et de plaider concrètement pour sa cause. Le monde des affaires devient un partenaire essentiel à cet égard.

Il est reconnu que nos plus grands exploits ont été alimentés par l'énergie que pouvait générer les défis les plus difficiles. Nous réagissons tous au défi. Certains croulent sous son poids, d'autres s'en servent comme tremplin pour se propulser vers les hautes sphères de la réussite. Et le monde des affaires et le monde scientifique nous offrent les plus beaux exemples de réussite. Le défi et les obstacles sont probablement les meilleurs carburants que l'on puisse leur offrir pour les stimuler à trouver des solutions et ultimement le succès.

La découverte des solutions aux problèmes d'environnement auxquels font face les pays en développement représente certainement un défi à la mesure de plusieurs d'entre vous. Faut-il le rappeler, chaque défi recèle toujours un immense potentiel de réussite. Les bénéfices que nos sociétés retireront de l'amélioration de l'environnement suite à l'implantation de solutions technologiques dans les pays en développement deviendront des bénéfices directs pour l'ensemble de notre société. Une forte proportion de la population mondiale souffre directement de la dégradation de son environnement et plusieurs attendent désespérément des partenaires pour développer les solutions technologiques qui pourront améliorer leur condition de vie.

Le Canada est probablement le meilleur endroit pour trouver ces partenaires. Le Canada bénéficie d'un prestige impressionnant à l'échelle internationale. Cela se révèle particulièrement vrai dans les pays en développement où le Canada est vu comme un pays aux valeurs humanitaires très développées. La réputation des entreprises canadiennes est également un avantage pour les entreprises canadiennes qui veulent développer un partenariat avec les gouvernements ou les entreprises des pays en développement. Cette réputation du Canada et de ses entreprises est un avantage indéniable sur vos concurrents internationaux.

The success of the private sector in developing countries will depend not only on specific technology or expertise but equally on the ability to adapt to social, economic and environmental

realities of the developing countries. Experience has showned clearly that those who succeed in their area of expertise are those who have been able to develop an efficient partnership with the governments and populations of the host countries. Partnership is thus the essential link through which your enterprise will succeed.

Le bon partenariat sera celui où vous parviendrez non seulement à bien comprendre la culture, l'économie et le milieu écologique où vos technologies seront utilisées, mais aussi à vous y adapter. Il ne suffit donc pas de transférer une technologie et d'attendre les bénéfices. J'aimerais ici vous faire une mise en garde: nous savons tous que la réputation est une chose très fragile. Il pourrait donc s'avérer opportun pour le secteur privé de se doter d'un code d'éthique environnemental et pour chaque entreprise d'établir ses normes et ses critères d'opération au niveau international.

ENVIRONMENT WITHIN CIDA

Allow me to briefly indicate what the Canadian International Development Agency has done to integrate environment within its programs. You must first appreciate that the main raison d'être of CIDA is poverty alleviation and partnership the key concept in program delivery. We thus strive to work with all the Canadian partners.

In the field of environment, CIDA has a policy aimed at ensuring that our programs take fully account of the environmental implications. It is also aimed at the undertaking of environmentaly beneficial projects or what we refer to as "environmental development". In the first instance we have an environmental assessment regime whereas in the case of environmental development , we aim at awareness raising, institution development, data management and environment enhancing activities. All of our programs are influenced by this policy and we are witnessing a substantive increase in the number and nature of projects that contribute to the environmental quality of recipient countries.

L'ACDI ET LE PARTENARIAT

L'ACDI a développé des programmes spécifiquement destinés à vous permettre de développer un partenariat. Par exemple le 21 septembre dernier, notre Ministre, Mme Landry, a annoncé une nouvelle initiative de partenariat avec les ONG environnementales. Ainsi, un fond annuel de $ 350,000 sera mis à leur disposition pour renforcer les liens entre les ONG environnementales canadiennnes et celles des PVD. Voilà une démarche de sensibilisation significative avec de nouveaux partenaires canadiens.

D'autre part, comme tous nos projets sont assujettis à une

évaluation environnementale il devient nécessaire de faire appel à des consultants en environnement. Ceux-ci sont parfois appelés à se rendre sur le terrain pour évaluer avec précision les impacts que pourraient engendrer un projet donné.
Nous faisons également appel au secteur privé dans la conduite de projets reliés au développement environnemental.

Autre exemple de partenariat, l'ACDI à travers son programme de coopération industrielle, encourage et favorise une plus grande implication des industries canadiennes dans le développement des pays du Tiers-Monde. Nous favorisons par exemple le transfert de technologie en accordant un soutien financier aux sociétés canadiennes désireuses d'établir des liens à long terme avec des partenaires des pays en développement. La division de la Coopération Industrielle a financé jusqu'à présent de nombreuses études et activités intégrant les dimensions environnementales ou visant expressément à atténuer ou à prévenir les problèmes environnementaux. Nous avons par exemple financé une étude qui a amené à l'établissement d'une usine de papier en Indonésie et nous avons prévu, à l'intérieur du projet, l'acquisition de matériel anti-pollution de pointe. Aux Philippines, nous avons fourni un soutien à l'établissement d'un procédé de recyclage des chlorofluorocarbures (CFC) produits dans des systèmes de refroidissement. L'ACDI par ses divers mécanismes peut donc vous appuyer dans vos démarches pour vous associer au développement des pays du Tiers-Monde.

CONCLUSIONS

I have attempted to characterize the development realities faced by Third World Countries. They present a tremendous challenge to the international community and Canadians, individually and collectively. They also offer a tremendous set of opportunities. But, we must not loose sight of the fact that a better attitude by Canadians and better government policies with respect to development will mean very little unless, enterprises and organizations such as yours, seize the opportunity which is offered to them, to deploy their know-how for the develpment of practical, efficient and adapted solutions to the environment realities of developing countries.

Mais dans tout cela, il faut rappeler qu'une des solutions-clés aux problèmes complexes d'environnement et de développement est sans contredit le partenariat. Ce partenariat entre les citoyens canadiens, les hommes politiques, les organisations non gouvernementales, les consultants, les entreprises et les pays en développement, doit non seulement être un alliage d'intérêt commun, soit la préservation de notre environnement, mais aussi le fruit de nombreux efforts vers l'instauration d'un modèle de développement durable, un modèle qui favorisera l'établissement d'une meilleure relation d'équité entre les membres de la société.

En bref, notre prore survie dépend directement de la survie et du développement du Tiers-Monde. C'est ce principe qui doit être à la base de la conscientisation environnementale et de l'efficacité de nos politiques de même que notre partenariat avec les pays en développement. Le défi qui est lancé à ceux dont le principal objectif est le développement économique et à ceux qui consacrent leur vie au développement et à la défense de l'environnement, c'est de produire une synthèse convaincante et viable avec les pays en développement.

Merci de votre attention.

Sixth Canadian Environmental
Government Affairs Seminar

CLIMATE CHANGE!
THE BASIS for SCIENTIFIC CONCERN

by

Dr. D.K. Dawson
Director General, Canadian Climate Centre
Environment Canada

October 22, 1990

INTRODUCTION

In June, 1988 a large group of policy makers, scientists, economists, legal and other experts from 46 nations met in Toronto to participate in the World Conference on the Changing Atmosphere. At the conclusion of that watershed meeting, the participants declared that "*humanity is conducting an unintended, uncontrolled globally pervasive experiment whose ultimate consequences could be second only to a global nuclear war*". They were referring to the rapid change in the composition of the earth's atmosphere due to human release of pollutants.

Seven months later, in January, 1989 the UN General Assembly adopted the "*Malta resolution*", which echoed the concerns of the Toronto conference statement and encouraged governments and organizations around the world to treat climate change as a priority issue. In February of this year, at the International Conference on Global Warming and Climate Change: Perspectives from Developing Countries, held in New Delhi, attendees called global warming "the greatest crisis ever faced collectively by humans". On March 10, 1989, heads of state from 24 nations signed the "declaration of the Hague" which concluded that "today, the very conditions of life on our planet are threatened by severe attacks to which the, earth's atmosphere is subjected". Most recently the G-7 Economic Summit in Paris in July 1989 declared that "*a framework or umbrella convention on climate change to set out general principles or guidelines is urgently required*".

Within the space of one year, a number of major international statements supported by senior level politicians have declared atmospheric change, and particularly climate warming, a major global environmental issue demanding political action now.

Why this rather sudden and intense political interest in the problems of the earth's atmosphere? How real is the threat to the atmosphere? How certain is the background science and can it justify the concern? If so, what are the implications for international law, and how should we respond?

In my presentation, I propose to briefly review what the background science can and cannot already say about this issue and, based on the many recommendations that have come forth, suggest some major themes and strategies for responding to it.

EVIDENCE for CHANGE

Regular measurements of atmospheric concentrations of CO_2 were started at Mauna Loa, Hawaii, in 1957. They are now being recorded at numerous stations around the world. the results are irrefutable - the mean concentration of atmospheric CO_2, now at about 350 parts per million by volume (ppmv), has increased by 11% over the past 30 year period. When compared with information obtained from air bubbles fossilized within the Antarctic ice cap, it appears that current values are about 20-25% higher than any previous level during at least the past 160,000 years. The principal source of this additional CO_2 in the atmosphere appears to be the combustion of fossil fuels. The destruction of vast tracts of tropical timberland to make way for agricultural development appears to be the second largest source. fortunately, not all of the unnatural emissions of CO_2 into the atmosphere remain there. The natural system appears able to accommodate a portion of these additions to the atmosphere by absorbing as much as 60% into other carbon reservoirs, primarily the oceans. However, the atmospheric CO_2 concentration is caused by the approximately 2.5 billion tonnes of carbon that remains in the atmosphere each year.

Other atmospheric constituents important to the climate system are also changing rapidly. Methane concentrations, monitored since the early 1970's, are increasing by about 1.1% each year and are already more than ***double*** those of pre-industrial times. Although increased global populations of cattle and acreage of rice paddies are believed to be primary sources, release of methane during coal and gas extraction processes and biomass burning are estimated to account for about 40% of the increase. The concentration of nitrous oxide is increasing by 0.3% per year, with an estimated 50% being contributed by fossil fuel combustion. Surface concentrations of ozone are also increasing in urban areas, largely as a by-product of energy use for transportation. Other gases such as chlorofluorocarbons, although as yet low in concentrations, are in many cases increasing very rapidly.

The above gases have several common features. They are all climatically important gases that already have an abundance sufficient to significantly influence the heat radiation balance of the climate system. For this reason they are collectively called greenhouse gases. They are all increasing in concentration in the atmosphere due to human activities. Finally, most are increasing in concentration at least partly due to emissions from the extraction and combustion of fossil fuels.

BASIS for CONCERN

Greenhouse gases collectively behave as an insulating blanket around the planet. Their effect on the incoming solar heat energy which fuels the earth's climate system is minimal. However, their combined influence on the outgoing heat radiation, emitted from the earth's surface towards space is large. By absorbing and returning much of this outgoing radiation, they effectively trap heat within the lower atmosphere. This "*greenhouse effect*" or heat trap is naturally occurring and essential to life on earth. Without it, the earth's surface would be more than 30°C colder. In summary, there is little scientific argument in the existence of a greenhouse effect. The debate is now will the size of the effect change as we change the concentration of the greenhouse gases.

Projections of future CO_2 emissions into the atmosphere clearly suggest an eventual doubling of atmosphere CO_2 concentrations over pre industrial levels. However, the timing of such doubling remains uncertain, since long-term, future human behaviour with respect to energy consumption is largely unpredictable. Concentrations of other greenhouse gases are also likely to increase significantly in future decades, adding to the climatic effects of rising CO_2 levels. A combined effect equivalent to a doubling of CO_2 appears to be possible as early as 2030 AD, and highly probable by 2050 AD.

Atmospheric scientists do not as yet agree on the magnitude of the net climatic changes that would result from an enhanced greenhouse effect. Nor do they agree on the regional characteristics of such changes. However, there is a consensus that such changes will be large, significantly amplified towards polar regions in fall, winter and spring seasons and accompanied by a major adjustment in global rainfall patterns. The range of estimates for the average global surface temperature rise for a CO_2 doubling varies from 1.5°C to 4.5°C and higher. Recent calculations in Canada suggest that 3.5°C is a more likely result. most model results also suggest a migration of mid-latitude North American storm tracking northward, resulting in a drier mid-continent and a wetter sub-arctic.

Among the most important considerations in assessing the implications of climate change is the ***rate*** of such change and the manner in which it affects the pattern of extreme climatic events. The frequency and duration of heat spells in summer is expected to rise substantially, while the very cold periods of winter become less frequent and much milder. Investigations into the effect of warmer climates on western drought also suggest that, if rainfall amounts do not change significantly, the frequency and severity of droughts would increase substantially.

Climate trends of the past century indicate that a global climate warming is already in progress. Global temperatures have warmed by 0.4 to 0.5°C since the end of the last century. Also, the six warmest years over that time period have occurred in the 1980's. Although this trend is consistent with the expected response of the climate system to changes in greenhouse gas concentrations to date, the trend is also still within the realms of long-term climate variability, and could potentially be explained by combination of natural causes. While some scientists are already preparing to give the credit to the enhanced greenhouse effect, most feel such conclusions are premature.

Numerous studies have attempted to evaluate how these changes in the climate system might affect global ecosystems and humans. Many of the consequences are potentially positive. The direct effects of higher CO_2 concentrations on plants, for example, are beneficial for improved growth and drought tolerance. Warmer temperatures may well improve growing seasons in cooler climates, while making polar regions more accessible to marine transportation. however, there is great cause for concern in other areas. With almost 50% of the world's human population located along the ocean coastlines, the possibility of a 1 metre or more rise in sea levels as a result of the thermal expansion of the oceans and the melting of the glaciers has very ominous implications; particularly for low-lying countries such as Bangladesh, Egypt, the Maldives and The Netherlands. Redistribution of rainfall is likely to decrease drought stress in some areas and turn others into deserts, dramatically changing the global pattern of food production and distribution. Slow forest response to climate shifts may result in large scale die back along the warm margins of current ecosystems. Heat stress, increased disease, poorer water quality and more frequent severe tropical storms could have major implications for human health and life. Of greatest concern is that the rate change may be too rapid to make adaptation possible for various natural ecosystems.

RESPONDING to the CHALLENGE

To summarize, the preceding suggests that the evidence for changing composition of the earth's atmosphere is indisputable. Furthermore, the potential for enhancing the greenhouse effect is real and the changes in global climate are likely to be large and will probably take place at a rate unprecedented in human history. Our basic understanding of the climate system is sound and implies a high likelihood of major global climate warming within the next few decades. Large shifts in global moisture distribution would occur as a result of this warming. Much less certain are the effects on the specific climates of each nation, each region and particularly any specific location. Although we can be sure the consequences for natural ecosystems and for human societies may well be large, who will be affected, by how much and when is much less certain. given this real risk for catastrophe, but not knowing the specifics or the certainty, how do we respond?

Numerous international gatherings have attempted to address this question in recent years, of which the five I mentioned in the beginning are among the most recent. The consensus opinion appears to be that we must simultaneously; extend our research into our understanding of the system and the response of the ecosystem to changes in that system; prepare to adapt to those climate changes that may well already be inevitable as a result of the emissions that have already taken place; and move both internationally and domestically to "*limit, reduce and, as far as possible, prevent*" further climate warming. International law becomes a factor in the second action and a key element in the last. Conclusions from recent international discussions suggest that such legal intervention:

- is inevitable, necessary, and achievable.
- must be fair and equitable. Developing nations must be an integral part of the solution, but industrialized countries must bear the primary technological and financial responsibilities for reducing emissions of atmospheric pollutants. After all, over 50% of global CO_2 emissions presently came from OECD countries, but all nations will suffer the consequences.
- must be coordinated and cooperative.

The need to deal with climate change presents a real challenge for international law. No longer are we dealing with bilateral transgressions and damages that can be examined on an aggressor/claimant basis, but with an issue where all nations are, more or less both aggressor and claimant. While many historical examples of treaties and legal decisions exist with respect to localized transboundary pollution problems, few can be found to serve as analogues for the new dimensions required in the global climate - change issue. The best models available are the Vienna Convention and the subsequent Montreal Protocol on substances that deplete the ozone layer; the Helsinki Accord on SO_2 reductions; and to a lessor extent the environment elements of the law of the sea. However, as the G-7 summit statement concluded, what is needed now is a broad umbrella framework convention that can deal with the atmosphere on a global and more holistic basis and that can appeal to all nations in a "*fair and equitable*" basis. Significant thought has already gone into how such an agreement might be formulated, including the deliberation of the Toronto conference and the results of an international meeting of legal and policy experts on protection of the atmosphere held here in Ottawa in February. Key elements of an agreement are likely to include:

- measures to limit, reduce and as far as possible prevent climatic change caused by human actions,
- exchange of scientific, technical, social-economic and other information,
- the transfer of relevant technologies, particularly to developing countries,
- establishment of a secretariat and a conference of parties.
- financial assistance to developing countries to meet internationally agreed target,
- procedures and institutional mechanisms for monitoring implementation, and development of appropriate dispute settlement procedures,
- adoption of a series of protocols to the convention for specific measures such as CO_2 emission reduction.

There are many other factors that must be considered as subsections of the framework convention. Included might be a need for a strong international scientific authority to ensure that atmospheric chemistry and climate are adequately monitored, that the appropriate research on climate change is pursued vigorously. Furthermore, since any disputes arising in connection with the convention and its protocols would likely be of a scientific nature, there is the need for some scientific authority. Such an international scientific authority might be viewed as a kind of **global "*academy of science*"** or simply, an international panel of experts whose authority would be recognized by all signatory nations. That scientific body could work closely with the world court which would be tasked with resolving disputes of a legal nature.

In conclusion it is, I believe, fair to say that scientists have a difficult task ahead of them to reduce the scientific uncertainties. However, far more challenging is that faced by the international law community as they come to grips with a truly global problem that can only be resolved by international collaboration.

Dr. D.K. Dawson - October 22, 1990

THE VALUE
OF
FEDERAL REGULATORY INITIATIVES
IN
PROTECTING THE ENVIRONMENT

BY

H.A. CLARKE
DIRECTOR GENERAL
ENVIRONMENTAL PROTECTION
CONSERVATION AND PROTECTION
ENVIRONMENT CANADA

TO THE
SIXTH CANADIAN ENVIRONMENTAL GOVERNMENT AFFAIRS SEMINAR
OTTAWA, ONTARIO
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Thank you. I am pleased to have the opportunity to meet with you to discuss the federal government's approach to environmental protection. Ms. Lorette Goulet, who was originally scheduled to speak, is unable to be here. She has asked me to convey her regrets to you.

Over the past few years, environmental protection has been a major concern for Canadians. The public has indicated to all levels of government its desire to see stringent environmental protection laws in place and enforced. The scope and magnitude of the environmental challenges facing us require that governments not only demonstrate strong leadership but that they be flexible and willing to consider new ideas and new approaches. Ingenuity, inventiveness and openness must be the framework guiding the formulation of new environmental protection policies.

In a country as varied and as diverse as Canada, it is essential that new environmental protection policies be developed in consultation with all interested parties. The provinces and municipalities, industries, academe, public interest groups and individual citizens - all have a stake in environmental protection. As many of you know, Environment Canada has put in place an extensive consultation process which allows interested parties to contribute. We recognize that each stakeholder has a valid contribution to make and that that contribution helps build the consensus necessary for the effective delivery of new programs and policies. This consultation process has been particularly effective in developing new regulations.

The Canadian government has adopted a multi-faceted and comprehensive approach to environmental protection - one that is balanced and fair. This approach is based on the use of the following four instruments.

1) Technology Development and Transfer - the government in partnership with industry and the university community is developing new pollution control technologies and is transferring these technologies and the accompanying expertise as widely as possible.

2) Public Education - the choices each and everyone of us makes in our daily lives can have an enormous

impact on the environment. Informing individual Canadians about their role in contributing to improved environmental quality can make all the difference in areas as varied as waste generation and water and energy conservation.

3) Economic Instruments -the coming years will see the increased use of economic instruments as environmental and economic considerations are integrated towards the goal of sustainable development - one that ensures that we do not squander the present at the expense of the future.

4) Regulatory Controls - a strong regulatory program controlling the release of toxic substances is now being implemented using the Fisheries Act and the Canadian Environmental Protection Act. New legislation on environmental assessment is before Parliament.

The above instruments all complement each other and, to a large degree, the ultimate success of one is contingent on the success of the others. As such, these instruments, though presented here today in seeming isolation, one from the other, are in fact closely interrelated and strategies for implementing them are developed in conjunction with the others, the aim being a maximum environmental protection effort. To guarantee that effort, all major stakeholders must be on line. Building new partnerships and cementing old ones is a basic component of the federal government's environmental protection strategy.

With regard to technology transfer, the Canadian government, through its laboratories, is promoting the development of technical solutions to environmental threats, with particular emphasis on pollution control and energy and resource conservation technologies. In doing so, government in partnership with the private sector, is helping to build a new and exciting pollution abatement industry for Canada. At the Environment Canada laboratories here in Ottawa and in Burlington, Ontario we have a scored a number of notable successes. For instance, the usual solution for communities requiring increased sewage treatment facilities has been to build bigger plants costing millions of dollars. Environment Canada's Wastewater Technology Centre in Burlington has developed a computerized audit system which identifies opportunities for making more efficient use of existing sewage treatment facilities thereby enabling municipalities to defer capital spending.

Canada alone produces 500,000 tonnes of sewage sludge each year. A pilot-scale reactor to turn sludge into oil has been developed. The process involves heating dried sewage sludge at low temperatures in an oxygen-free environment - a process similar to nature's, only faster: 30 minutes instead of millions of years. This technology is now being marketed around the world.

An alternative technology that has been carefully studied by our River Road Environmental Technology Centre is the controlled incineration of solid wastes. Incineration vastly reduces the volume of such wastes, leaving only the ash for landfilling. Tests have shown that most air pollutants generated by solid waste incineration can be controlled with existing, state-of-the-art technology.

As well, there are programs promoting new technologies such as:

1) The Development and Demonstration of Resource and Energy Conservation Technology (DRECT) program encourages the development of technologies promoting waste reduction and resource recycling;

2) The Industrial Research Assistance Program pairs research and development projects in the private sector with technology and expertise available from government laboratories, provincial research organizations, universities and foreign sources. This helps Canadian firms put environmental technology and expertise to work both by assuring the co-operation of the appropriate laboratories, and by underwriting some of the costs. The result: a cleaner environment and greater productivity, profitability and international competitiveness for small- and medium-sized Canadian firms.

Over the years, Environment Canada has undertaken a number of initiatives to inform the Canadian public about the environment and how they can contribute. Not only do we intend to carry on in this regard, but we will be increasing our efforts in this area. Bringing the public on line in key areas can lead to better environmental quality while at the same time saving society millions of dollars.

One cannot overestimate the importance of the lifestyle decisions taken by each and every one of us. Consider the whole question of garbage and dwindling land-fill capacity. Less waste through better shopping habits, through re-use and recycling can make all the difference. Blue-box programs, in those communities which have them, are a major success because the public cares and is willing to contribute to environmental quality whichever way it can. We see this demonstrated in the growing sensitivity about the amount of water we use in our homes and in the overall public perception that we should do more about energy conservation. Recently, we had another example of an informed public acting - concern about the ozone layer led to market boycotts of foam cups blown with CFCs. The public is our greatest ally - we must work to bring them on line even more; they can make our job just that much easier.

The Environmental Partners Fund is a good example of individual citizens joining together to improve their local environments. This Fund is a grassroots program involving governments, community groups and industries. It helps organizations to focus their concern and creativity on finding innovative solutions to environmental problems. The Fund can provide up to 50 per cent of a project's cost to a maximum of $200,000 over a three-year period. Examples of the type of projects being assisted include a recycling project in Portage la Prairie, Manitoba and the clean-up of the shores of the Annapolis River in Nova Scotia.

The Environmental Choice Program was created to help consumers find products which ease the burden on the environment. The EcoLogo, an image consisting of three doves intertwined to form the shape of a maple leaf, appears on goods and services that meet the Program's product-specific criteria. To date, 24 companies carry products awarded the logo. These products range from re-usable cloth diapers through low-pollution water-based paints to recycled fine paper. The Program is having a major impact and several of Canada's top retailers are now seeking the EcoLogo for their own products.

Environmental and economic considerations cannot be separated. Canadians recognize that we need to embrace a new way of thinking if we are to anticipate and prevent further problems in this area. We have to adopt, in a pragmatic and practical way, the philosophy of sustainable development. Central to the concept of sustainable development is the integration of environmental considerations and economic decision-making. This new approach has the potential to be as far-reaching in its consequences as history's great social movements, such as the agricultural or industrial revolutions. We must begin to make greater strides in putting environmental concerns at the heart of economic decision-making.

Progress toward sustainable development will require careful consideration of a range of specific social, economic, and environmental goals, the setting of priorities based on public discussion and debate, allocation of resources to those priorities, and a high level of government leadership supported by public understanding of the issues and commitment to action. The viability of introducing new economic incentives such as tradable emission rights, deposit/refund systems and environmental surcharges, as well as greater use of the polluter pays principle, will be explored to the fullest.

Economic incentives are consistent with the government's market-oriented philosophy and, in turn, contribute to the development of new and more effective pollution-control technologies and expertise. Canada's free-market economy, albeit with some government intervention, allows for a responsive and flexible approach to managing issues. For instance, we know that cost plays a great part in determining consumer choice; we can, if we choose to do so, make those choices ones which promote environmental protection. Consider the limited use made so far of economic instruments in Canada. Deposit refund schemes for soft drink bottles and a higher tax on leaded gasoline than on unleaded gasoline have been major successes.

Later this year, the federal government will be releasing its environmental agenda - the Green Plan. The Green Plan is one of the most ambitious efforts yet by any nation to put the principles of sustainable development into practice, both nationally and internationally.

Canada is already positioned to be a world leader in implementing sustainable development. Multi-sectoral National and Provincial Round Tables have been established to serve as a catalyst for bringing about change, to build a national consensus on sustainable development and provide an independent forum for Canadians from different sectors to work co-operatively. In partnership with the provinces, industry, the academic community and NGOs, the federal government has undertaken a number of initiatives to promote sustainable development. Some examples are:

1) The St. Lawrence Action Plan - the Plan is aimed at cleaning up the River thereby ensuring the preservation of endangered species such as the beluga as well as continued operation for down river fisheries.

2) The Globe 90 Conference in Vancouver - this international gathering provided a showcase for some of the most advanced environmental technologies and innovative ideas for sustainable development in the world. Planning for Globe 92 is now in progress.

3) As well, improved monitoring and reporting on the state of the environment are under way as part of a

federal environmental strategy for measuring progress towards sustainable development. Environment Canada and Statistics Canada will issue state of the environment reports; they are also establishing a national environmental reporting system.

The government's fourth instrument for protecting the environment is its regulatory agenda. The federal government is now putting in place a strong regulatory program to control the release of toxic substances. Under the Fisheries Act and the Canadian Environmental Protection Act more than 64 new regulations controlling the release of toxic substances into the environment will be introduced over the three next years.

The Canadian Environmental Protection Act is designed to protect against toxic contamination. Under CEPA, a substance is toxic if it threatens human health, or the environment itself - plants and wildlife.

In order to come to terms with substances already in use in Canada, a Priority Substances List identifying those substances most urgently needing assessment for their environmental and human health impacts was compiled. Government is required to complete individual assessments of the 44 substances on the List by 1994. Based on the results of those assessments, regulatory controls will be established for particular substances at those points in their life cycle where releases can occur.

CEPA's second approach to managing toxic substances deals with substances new to Canada, either through importation or manufacture. A Domestic Substances List containing substances in use in Canada between 1984 and 1986 has been compiled and will be published in early 1991. Substances not appearing on the List will, by their exclusion, be considered new substances. The New Substances Notification Regulations coming on line early in 1991 will require importers and manufacturers to submit data sufficient for a complete assessment of these new substances prior to their introduction into Canada.

Environmental protection regulations are developed in full consultation with stakeholders. As well, a comprehensive Regulatory Impact Analysis Statement (RIAS) is prepared. This Statement, which consists of an analysis of the impacts of the proposed regulation and how the proposal will be enforced once it is promulgated, must demonstrate that the benefits derived from implementing the regulation exceed the costs of that regulation. As such, the Regulatory Impact Analysis Statement is critical to decision-makers in their consideration of the scope, range and validity of a proposed regulation.

The period from the initial decision to regulate through to Canada Gazette Part II and implementation of the regulation can be lengthy. But the effort is worth it if we are to have practical, do-able and affordable regulations. It is vital that we ensure that regulations do not cut away competitive edges or sap a robust and dynamic Canadian industry. Some regulations can even contribute to increased research and development and science and technology. As a further measure to ensure that regulations are both effective and realistic, the impact of the new controls can be evaluated and, if the findings so indicate, the regulation itself can be modified and amended.

CEPA is not only a major vehicle for protecting the Canadian environment, but controls developed under it enable us to fulfill international environmental obligations. New regulations on ozone layer depleting substances such as CFCs and halons enable us to fulfill our obligations under the Montreal Protocol on Ozone Layer Depletion.

The Ocean Dumping Control Act, now Part VI of CEPA, implements the provisions of the London Dumping Convention - also known as the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. Under Part VI, the disposal of wastes at sea is regulated through a system of permits and inspections administered by Environment Canada.

Furthermore, new import/export regulations dealing with hazardous wastes will allow Canada to meet its obligations under the United Nations Basel Convention which governs the transboundary movement of hazardous wastes.

The Fisheries Act is one of Canada's oldest pieces of legislation. The Act was promulgated in 1868, one year after Confederation, and then, as now, the Fisheries Act contained provisions prohibiting the pollution of fish-bearing waters. A number of court cases in the late 19th century and early 20th determined that the federal government had jurisdiction over all aspects of fisheries management in coastal waters, as well as inland waters, even though actual property rights for fish in inland waters reside with the provinces.

Environment Canada is primarily responsible for enforcing Section 36 of the Fisheries Act. Subsection 36(3) is the cornerstone of the pollution provisions of the Act; it prohibits the deposit of substances deleterious to fish or fish habitat.

More stringent Pulp and Paper Effluent Regulations under the Fisheries Act have been developed and will come into force in 1991. The regulations for base metal mines will also be strengthened during 1991.

For the federal government, regulatory controls have been and continue to be a major tool for ensuring environmental protection. Quite simply, regulations are used because they have shown themselves to be effective in improving environmental quality. They establish national standards applicable to all parts of the nation and, as a result, provide all Canadians with an equal measure of protection. Regulations are fair; they spell out, in no uncertain terms, what is required, of whom and when and how.

Are regulations valuable? Certainly. We have the proof to show that certain regulatory initiatives have led to dramatic improvements. We need only look at air quality in our cities to see the difference over the last twenty years. New motor vehicle emissions standards and the phase-out of lead additives in gasoline have resulted in major improvements. It is, however, one thing to recognize the value and validity of a regulatory approach. It is another question if one asks - are regulations sufficient? Again, in terms of what a regulation is called upon to do, to establish controls on the entry of a substance, emission or effluent into the environment, then yes, in that regard, a regulation is indeed sufficient. But, in terms of the overall environmental protection initiative clearly, regulations are but one of the tools to promote protection and must be used in conjunction with instruments such as technology transfer, public information and economic instruments. And the success of these instruments rests in great part on the partnerships we build.

We recognize, at the federal level, that partnerships among the stakeholders - other governments, industries, academe, consumer and environmental groups - these partnerships are essential if genuine and sustained progress in environmental protection is to be achieved. These partnerships are multi-layered and multi-lateral. They involve co-operation among government agencies, between different levels of government, national and international fora, industry and their associations and environmental and public interest groups. And then there is the partnership each of us creates with our environment through the choices we make as individual citizens.

The federal government's major partner in environmental protection are the provinces and territories. The recognition of this basic fact is built into CEPA. The Canadian Environmental Protection Act provides a national focus for environmental protection initiatives. Under CEPA, the federal government will recognize the application of provincial regulations if they are comparable in effect. In this way, the provincial government is given the option of developing and using its own statutes for regulating.

Such agreements will also ensure that industry is spared the double jeopardy of competing federal and provincial regulations. But federal-provincial partnerships are not restricted to arrangements on the application of regulatory controls.

The major vehicle for federal-provincial partnership is the Canadian Council of Ministers of the Environment (CCME). A number of co-operative federal-provincial ventures are now under way. For instance, there is the National Contaminated Sites Program whereby the federal and provincial governments have agreed to provide, on a cost-shared basis, $200 million over five years to clean up orphan sites. Furthermore, both levels of government will each be contributing an additional $25 million for the development and demonstration of clean-up technology. Agreement has been reached with the government of British Columbia to use the contaminated areas of "Pacific Place" in Vancouver as the site for the first technology demonstration project under the program.

As you can see, substantial progress in our efforts to protect the environment is being made. Standing here before you I can but reiterate the seemingly obvious, it's an exciting time to be in the business of environmental protection. The challenges are pronounced: we have to work to change attitudes; we need to find effective solutions to the problems facing us; we will have to discover new technologies to implement many of those solutions; we must build new partnerships so that everyone is contributing to the common goal of integrating environmental and economic considerations into our day to day business. We all of us have the opportunity to use the new tools coming on line and, in using them, make the difference.

Thank you.

TRANSPORTATION AND THE ENVIRONMENT

A PRESENTATION TO THE SIXTH
ENVIRONMENTAL GOVERNMENT AFFAIRS SEMINAR
OCTOBER 22-24
OTTAWA, ONTARIO

BY

BARRY KERSHAW
DIRECTOR VEHICLE SAFETY AND ENERGY OPERATIONS
ROAD SAFETY AND MOTOR VEHICLE REGULATION DIRECTORATE
TRANSPORT CANADA

TRANSPORTATION AND THE ENVIRONMENT

PRESENTATION TO THE SIXTH ENVIRONMENTAL GOVERNMENT AFFAIRS SEMINAR

1. THE TRANSPORTATION SYSTEM

1.1 Description of system

Canada is a large country geographically, and a nation that depends on trade between regions as well as internationally. Transport improvements and investments have long been the key to economic growth - from as far back as the time of the voyageurs and lumbermen. The railways were the cornerstone of industrialization in the early days, and roads and motor vehicles have played an equal part in the dynamic growth of the latter part of the 20th century. Air transport has played a major role in the opening up of the north, as well as in providing rapid movement for business travel.

Transportation infrastructure today includes 841,000 km of roads, 95,670 km of railway track, 1,346 licensed airports and 25 large deep water ports and 476 smaller harbours.

1.2 Passenger and goods trips

Every day, about 140,000 Canadians travel between cities by bus, rail or air, and hundreds of thousands by automobile. In urban areas there are millions of other surface trips. Almost two million tonnes of freight are moved daily by trains, trucks and ships.

Annually Canada's ports and harbours handle 327 million tonnes of commodities; railways help move 284 million tonnes of freight and trucks of all sizes carry 239 million tonnes of goods.

1.3 Dollar value and economic benefit

Airlines, shipping lines, railways, trucking firms and bus lines earn more than $48 billion a year and provide direct employment for more than one million Canadians. The automotive industry and support industries provide a further 575,000 jobs. Investments by government and non-government interests in transportation total $160 billion.

Trade between Canada and the United States amounts to $192B annually and is the largest flow in the world. Trucking is the dominant mode for both exports and imports and its market share appears to be growing annually.

2 ENVIRONMENTAL IMPACT

As can be seen from the above, Canada's transportation system is vital to the sustained economic growth of the country, and is a major contributor to the high standard of living enjoyed by Canadians. There are downsides, however, and the very transportation system that supports us is impacting negatively on the environment.

Emissions from all forms of transportation are polluting our air and waterways. Noise is becoming of increasing concern, particularly adjacent to high volume roads and airports. Construction works associated with all forms of transportation are eating up valuable land. Lampreys and zebra mussels have been imported by the transportation system. Rivers are dammed and waterways diverted. The list goes on........

Canadian governments, industry and private citizens all have a role to play in finding solutions to these problems. This paper will describe some of the actions are being taken at the federal level, and by Transport Canada in particular, to combat the growing problems of air pollution.

2.1 Environmental issues - smog, acid rain, global warming, ozone depletion

The combustion of fossil fuels, in any form, in internal combustion engines used for transportation or industrial purposes is responsible for a major portion of the air pollution produced in Canada. Pollutants of concern are: carbon dioxide and monoxide, oxides of nitrogen, diesel particulates, and a variety of unburned or incompletely burned hydrocarbons. Other substances such as chlorofluorocarbons (CFCs) have harmful environmental effects, and a number of toxics such as aldehydes and polycyclic aromatic hydrocarbons (PAHs) are suspected or known carcinogens.

There are two categories of air pollutants: primary and secondary. Primary pollutants are those released directly from the combustion process, such as carbon monoxide. Secondary pollutants result when a primary pollutant, often called a precursor, undergoes some chemical transformation to create another form of pollution, e.g. NOx creating ozone or nitric acid.

The major Canadian environmental issues associated with emissions from internal combustion engines include climate change (global warming), depletion of the atmospheric ozone layer, acid deposition, ground level ozone (smog), and the exposure of the population to a variety of toxic air pollutants. The details of these problems are too complex to address fully in this paper. It is sufficient to say that the problems are real, and require addressing immediately. Even though there are some unknowns, there is sufficient evidence of cause and effect in a number of areas to warrant the introduction of corrective measures.

2.2 Transportation contribution to precursors

Table 1 illustrates the transportation contribution to the inventory of some of the primary pollutants.[1]

TABLE 1
EMISSION INVENTORIES (1985, KILOTONNES)

SOURCE	HC	CO	CO2	NOx
TRANSPORTATION	780	6,135	118,772	994
INDUSTRIAL ENGINES	90	1,028	18,056	259
FUEL COMBUSTION	161	1,208	138,970	345
POWER GENERATION	3	56	94,428	248
INDUSTRIAL PROCESSES	203	713	29,656	89
OTHER	561	1,639	35,299	24

[1] A Plan to Identify and Assess Emission Reduction Opportunities from Transportation, Industrial Engines and Motor Fuels, TP 9773 - Transport Canada

The transportation component of the emissions inventory described in Table 1 can be further subdivided into the following modes shown in Table 2.

TABLE 2
TRANSPORTATION EMISSION INVENTORIES (1985, KILOTONNES)

SOURCE	HC	CO	CO2	NOx
ROAD VEHICLES				
PASSENGER CARS	471	4,016	52,547	392
LIGHT DUTY TRUCKS	115	850	10,509	74
MEDIUM DUTY TRUCKS	78	570	7,813	54
HEAVY DUTY TRUCKS	65	436	27,075	286
MOTORCYCLES	4	15	192	1
NON-ROAD VEHICLES				
AIR	10	117	12,271	34
MARINE	28	85	5,219	17
RAIL	10	48	3,145	139

As can been seen in Table 2 the contributions from the on-road modes completely overshadow those from the other modes. Nevertheless, collectively, the off road modes are still significant emitters, particularly of NOx from rail, and CO2 from all three.

2.3 Forecasts

A considerable amount of modelling is being undertaken to improve emissions forecasting and the predictions are changing continuously as better input and correlation factors become available. The forecasts shown in

Tables 3 & 4 are taken from the work being done for the Management Plan for NOx and VOC commissioned by the Canadian Council of Ministers of the Environment. Unfortunately, direct comparisons with Tables 1 & 2 are not possible. Changes in the amount of Hydrocarbons and oxides of Nitrogen illustrate the relative changes in the emission of pollutants forecast for 2005 by sector.

TABLE 3
EMISSION FORECASTS (2005, % CHANGE FROM 1985)

SOURCE	HC(VOC)	NOx
TRANSPORTATION	-31%	-27%
INDUSTRIAL ENGINES	+20%	+33%
FUEL COMBUSTION	+25%	+29%
POWER GENERATION	N/A	+42%
INDUSTRIAL PROCESSES	+58%	+57%
OTHER	+20%	+34%

TABLE 4
TRANSPORTATION EMISSION FORECASTS (2005, % CHANGE FROM 1985)

SOURCE	HC(VOC)	NOx
ON-ROAD VEHICLES	-35%	-32%
OFF-ROAD		
AIR	+31%	+27%
MARINE	+13%	+24%
RAIL	-14%	-14%

The above forecasts are based on predictions of current trends, i.e. with continuing growth in travel. They do not take into account corrective actions being planned under the various emission control programs described later in this report. Of note is the decrease forecast in the on road transportation component - almost the only one. This reflects the effect of the new emission standards for light duty vehicles in 1987 and heavy duty in 1988.

The forecasts show areas of high growths, which must be of concern. Equally important, however, are the absolute contributions of some sectors; transportation in particular. Despite the impressive improvements being made in the on-road component, transportation remains a major contributor to pollutants causing urban smog. However, the growth in the use of industrial engines for construction equipment (which lack the sophisticated emission controls of the on-road sector) is a major concern as their use is primarily in the urban areas.

Concern for global warming and CO2 production expand the need for controls on fuel combustion for heating and power generation, as well as improvements to the fuel consumption performance of on-road vehicles.

3 INDUSTRY PERFORMANCE

3.1 On road vehicles

3.1.1 Passenger cars

Under the impetus of government emissions regulations, the auto industry has made impressive improvements in the unit emissions from passenger cars. As can be seen in Table 5, emissions of HC and CO have been reduced by over 95% from the uncontrolled vehicles of the 1970s, while NOx emissions have been cut back by 70%. Further reductions are planned for the mid 1990s.

TABLE 5 - LIGHT DUTY VEHICLE EMISSION COMPARISONS

ITEM	NO_x	CO (grams/mile)	HC
A. PERFORMANCE			
1970's average vehicle	4.1	84.0	10.6
1990 Fleet Avg (excl GM & Ford)*	0.244	1.33	0.16
B. STANDARDS			
1988 Standard	1.0	3.4	0.41
Proposed 1994 Standard	0.4	3.4	0.25

* The values represent emissions after completion of 80,000 km. Industry has to exceed the regulated values by a considerable margin to account for production tolerances as every vehicle must meet the standard.

Despite the improvements described above, the large number of passenger cars means that their emissions will still account for 25% of NOx and 20% of HC in 2000. These proportions are forecast to grow further in later years due to increases in truck and passenger car travel. Industry estimates that late model cars account for about 60% of travel, but create only about 20% of the pollution. The remaining 40% of the vehicles create about 80% of the pollution from passenger cars.

There are also some worrisome trends occurring in the fuel consumption performance of passenger cars which directly affects the production of CO2 - a major greenhouse gas. There have been annual increases over the last 5 years in engine displacement and horsepower, vehicle weight and the penetration of light trucks and vans into the fleet makeup. Average fuel consumption ratings have not increased as vehicle manufacturers have applied new engine technology such as twin overhead cams, four valves per cylinder, fuel injection and electronic engine controls to counter the adverse effects of the greater luxury and performance of the new cars. These trends are illustrated in Figures 1 to 4.

3.1.2 Trucks

Emission performance, under the impetus of government regulation has made similar, if less dramatic, improvement in the heavy duty truck fleet. New controls in 1988 and forecast for 1991 and 1994 will further reduce emissions so that by 2000 it is forecast that the NOx emissions from the truck fleet will drop by 5%, and HC by 25%. This will occur despite forecasts of increased travel. A major improvement is expected in the emission of particulates. We should see less visible smoke and soot from trucks and buses.

In the area of fuel consumption and CO2 emissions, the pressures of competition for transportation dollars have brought about great gains in fuel economy. The trend to larger truck/trailer combinations should continue to bring about reductions on a ton mile of freight basis, although on a per vehicle basis the figures may appear to be increasing.

3.2 Non-road vehicles

There is little data on the past performance of the non-road sector, and the forecasts for the future are the subject of considerable work at the present time. Given the general lack of regulation, it is expected that the improved performance seen in the on road sector may not have been realized, but fuel performance improvements have occurred due to economic pressures. These improvements should bring about reductions in the per vehicle emission levels, but travel growth would appear to overwhelm their impact, as can be seen in Table 3.

4 EMERGING CONTROLS

4.1 Canadian Council of Ministers of the Environment (CCME) - NOx/VOC management plan

In 1988, the CCME commissioned a task force of federal and provincial officials to prepare a plan by November 1990 to control emissions of precursors to urban smog. Over two years of study, public consultations and intergovernmental discussion have gone into the development of a plan that, when implemented, will result in reductions of up to 35% in ground level ozone in Canada. Target levels, based on human and plant tolerances, have been established that are among the most stringent in the world (82 ppb of ozone). In order to reach the target levels in some areas, namely the Windsor to Quebec corridor, comparable corrective actions will have to be taken in the U.S. because of transboundary flows. As the U.S. target level is higher (120ppb), it is expected that this will be the subject of bilateral discussions for a number of years.

Drastic control measures are required in areas of heaviest ozone concentrations and include controls over industrial processes such as refineries, paint shops, bakeries, dry cleaners, power generation, home heating, mobile and stationary engines, solvent and glue constituents. In addition to technological controls, lifestyle changes are required if we are to reach the target levels. People will have to give up their love affair with the one person per vehicle concept and use public transit or car pools; vehicles may be banned from high density areas; and air conditioning may be reduced. There may be hundreds of smaller actions that collectively will reduce the problem but affect our style of living as we now know it.

4.2 Transport/DOE plan

In the federal government, the policy department on emissions is Environment Canada. Environment Canada establishes the nature and extent of environmental problems and the extent of corrective actions required. Transport Canada is responsible for motor vehicle emission standards under the authority of the Motor Vehicle Safety Act. Standards are set in close consultation with other federal departments, industry and the public. A similar situation exists with the fuel consumption program, where Energy, Mines and Resources is the policy department on motor vehicle fuel consumption levels.

In July 1989 the Minister of Transport and the Minister of the Environment jointly announced the commencement of a plan to place stricter controls on emissions from all forms of transportation and engines using transportation fuels. This plan was aired at a public forum in September 1989 and representations from 31 different parties representing industry, governments, environmental groups and the public were heard.

Studies are commencing on the technical feasibility and financial and social implications of the proposed regulations announced in the TC/DOE plan. Input from the representations has been valuable in guiding the work to be performed.

One element of the plan has been accelerated - new standards for passenger cars. In February, the Minister of Transport announced the government's intent to proceed with new passenger car emission standards starting with the 1994 model year, and targeted at those to come into effect in California. Work is underway on the development of regulations and a Regulatory Impact Analysis Statement. It is anticipated that the results of this will work will be announced later in the fall.

5 CONCLUSIONS

In conclusion, I would like to wrap up by emphasizing that transportation, while vital to the economic lifeblood of the nation, is a major contributor to environmental damage. The problem and solutions are complex - and expensive.

Industry is aware of its part in the problem, and is committed to playing its part in the solution. Based on past results, I am confident that Canadian companies will rise to the challenges of sustainable development and we will continue to have a vibrant economy - and a livable environment.

Governments at all levels are working diligently to develop a framework of controls, incentives and disincentives to foster a healthy environment. The public are concerned about the environment, and have not been shy in expressing this concern to politicians. They expect action, and have expressed a willingness to support reasonable solutions.

FIGURE 1

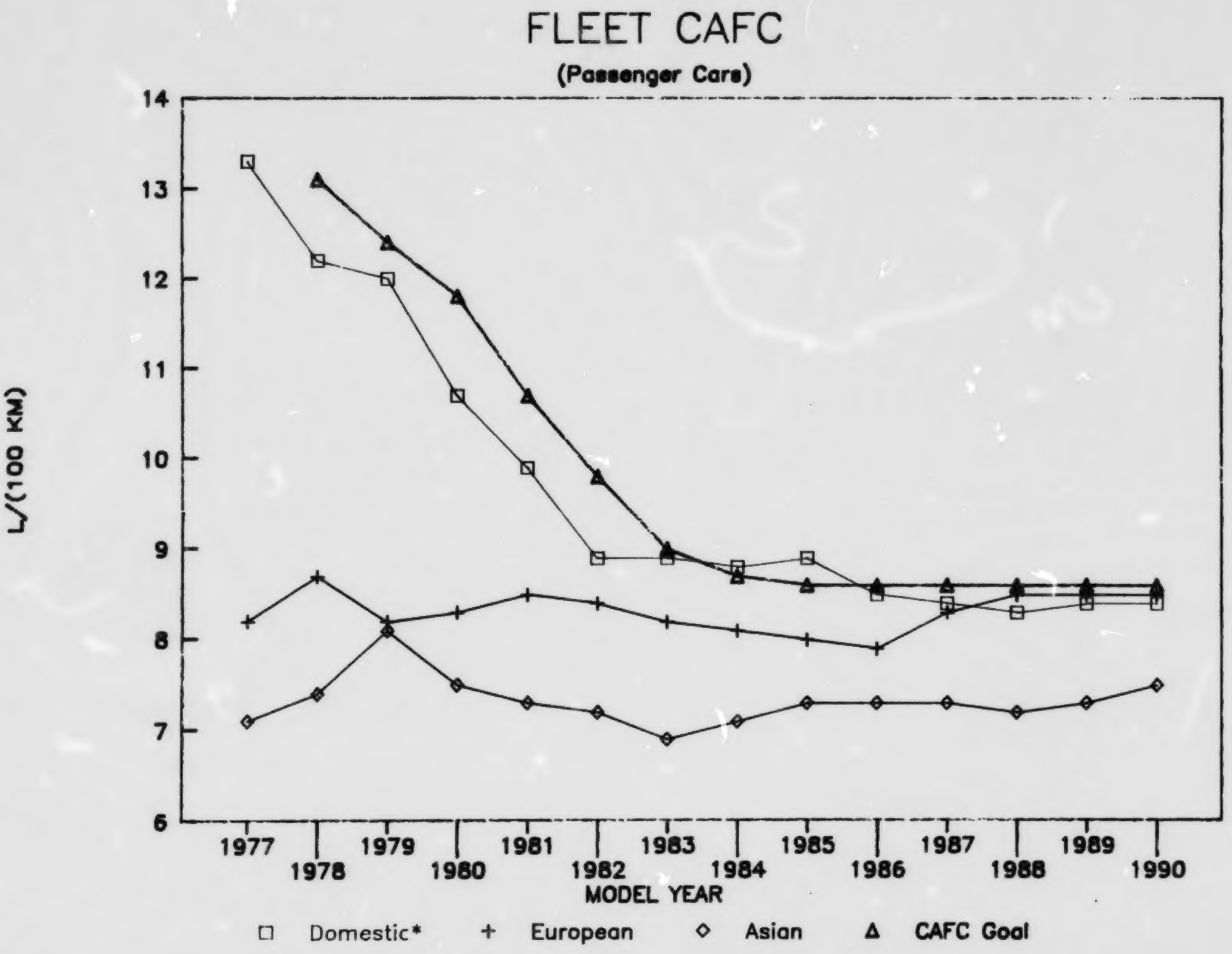
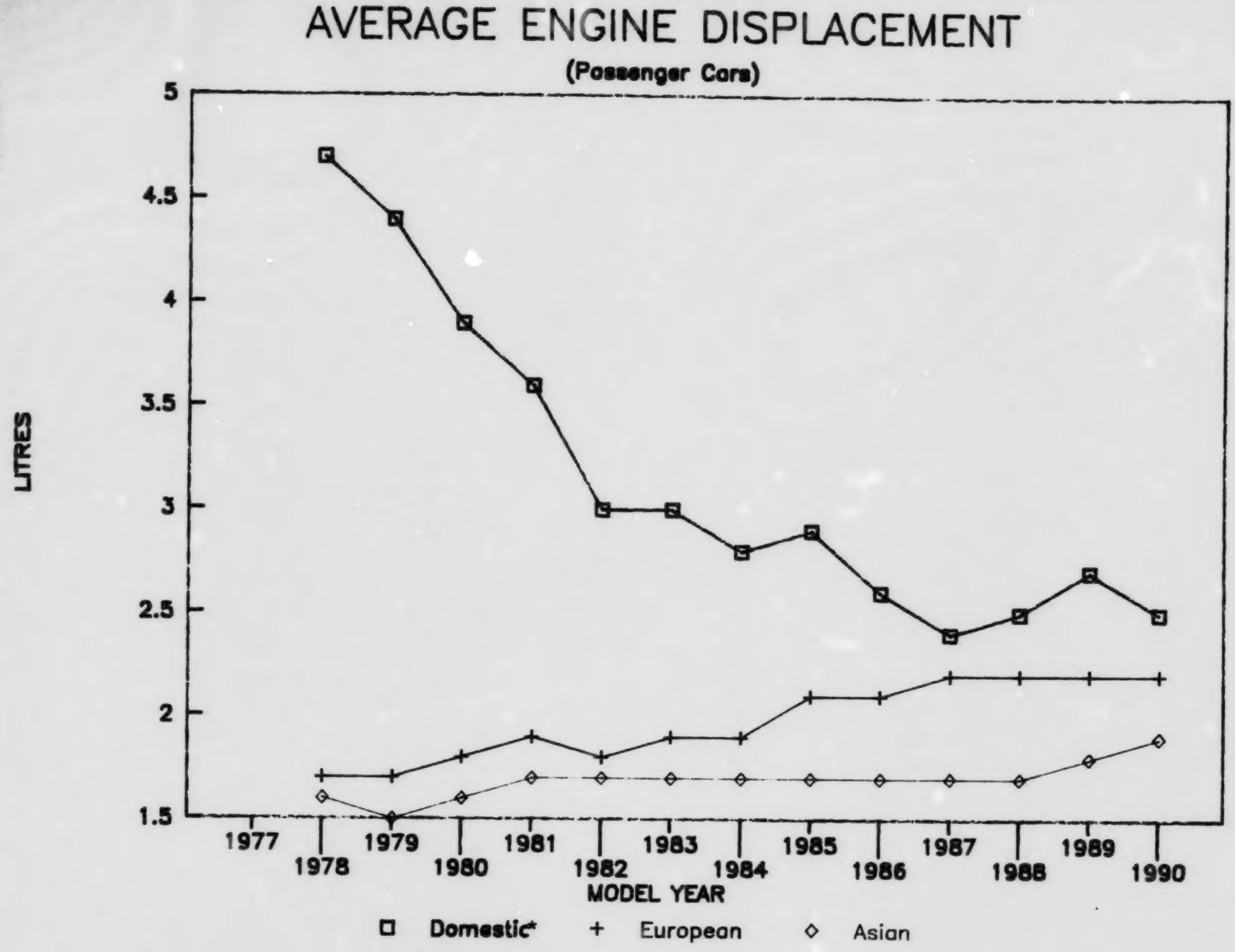
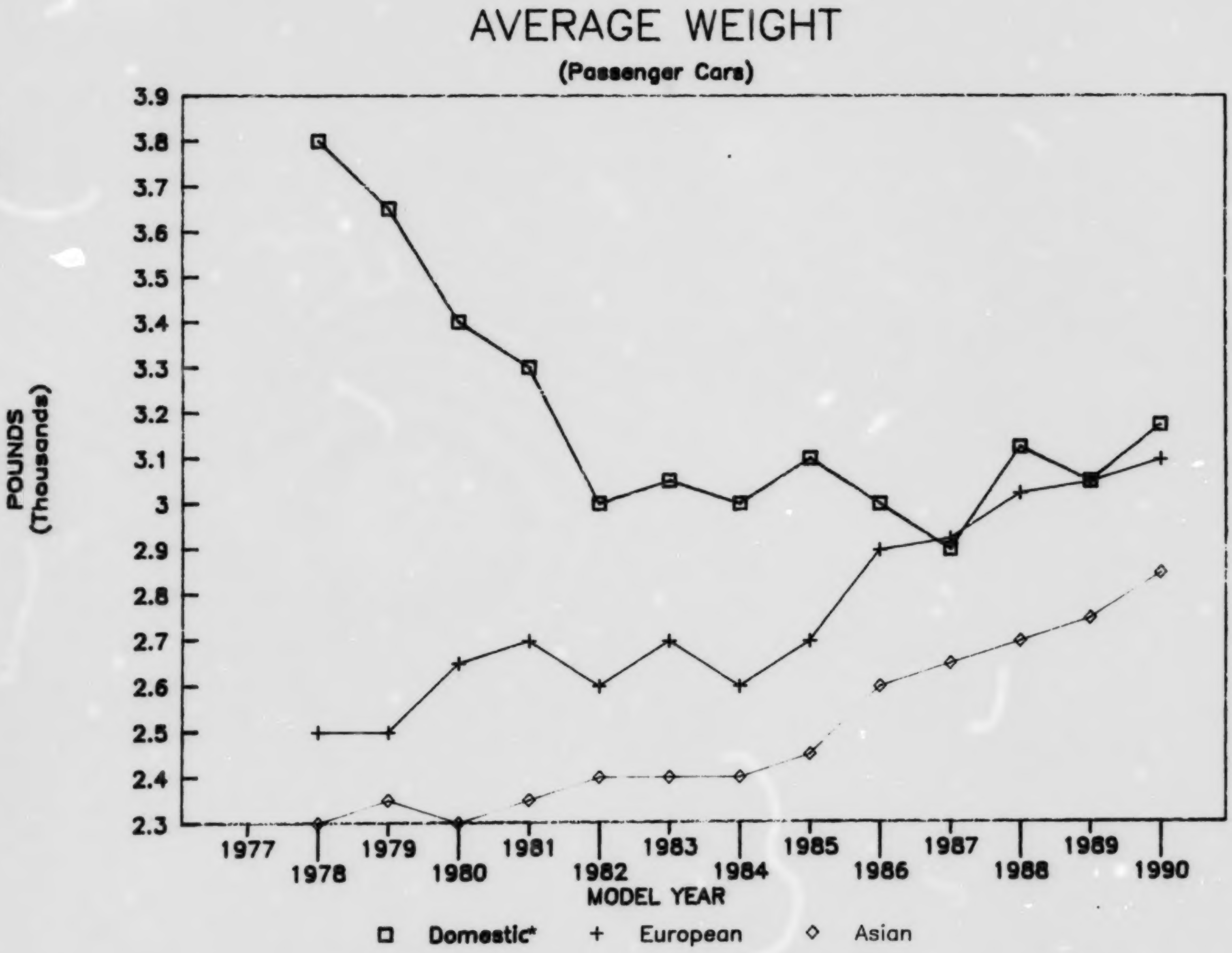

FLEET CAFC
(Passenger Cars)
L/(100 KM)
14
13
12
11
10
9
8
7
6
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
MODEL YEAR
□ Domestic*
+ European
◇ Asian
Δ CAFC Goal

FIGURE 2



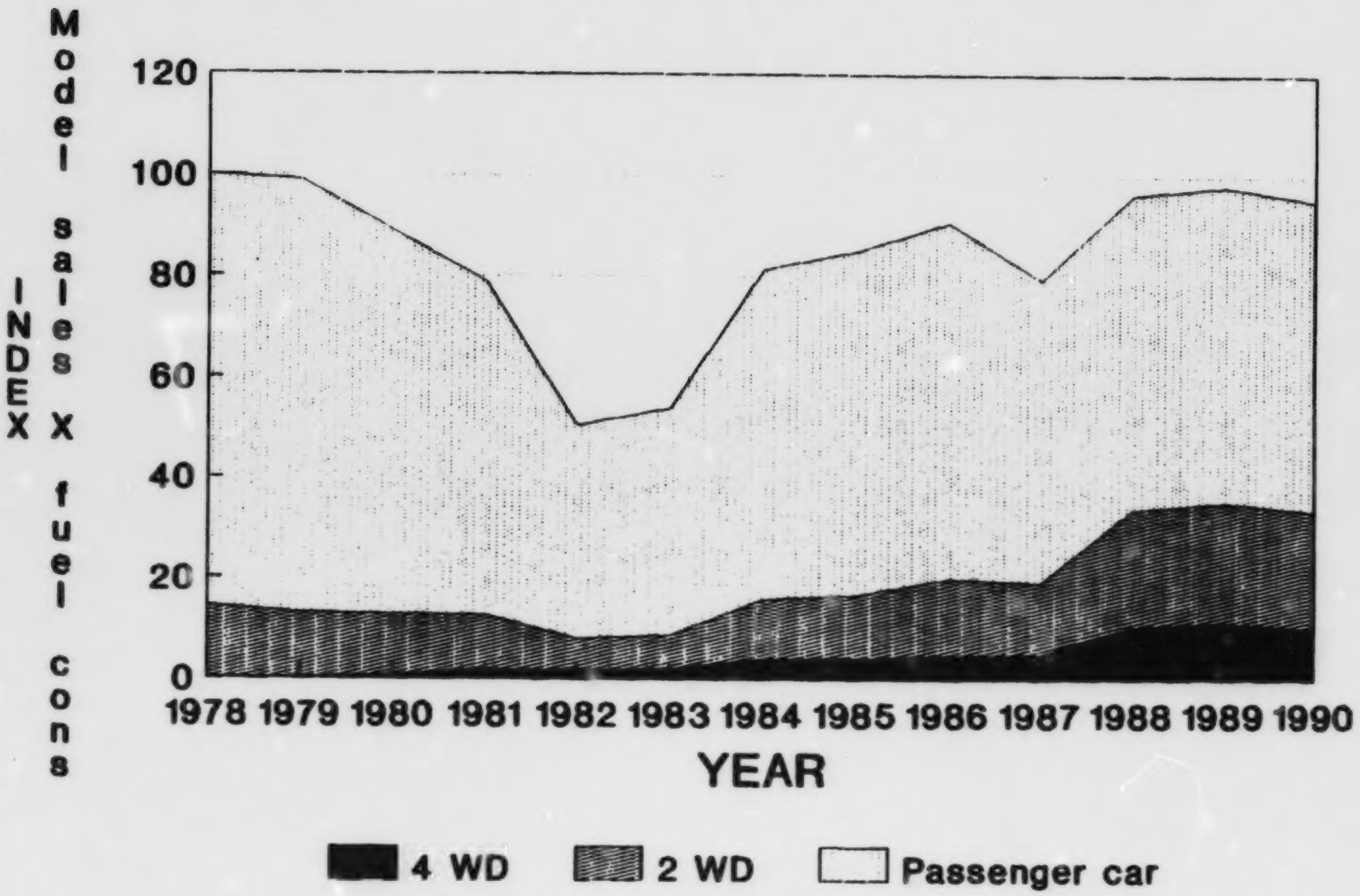
* Does not include Ford 1988-1990, GM 1990

FIGURE 3



* Does not include Ford 1988-1990, GM 1990

LIGHT TRUCK FLEET PENETRATION



Note: 1988 truck def'n changed to ›8500#

NOTES FOR REMARKS
BY
SHERRI WATSON
ACTING DIRECTOR OF THE
INDUSTRIAL PROGRAMS BRANCH
CONSERVATION AND PROTECTION
ENVIRONMENT CANADA
TO THE
CANADIAN ENVIRONMENTAL GOVERNMENT AFFAIRS SEMINAR
OF THE
AIR AND WASTE MANAGEMENT ASSOCIATION
OTTAWA, ONTARIO
OCTOBER 23, 1990

PUBLIC CONCERNS:

I DON'T THINK I'LL SURPRISE ANYONE HERE BY SAYING THAT AIR QUALITY IS A HIGH-PROFILE PUBLIC ISSUE. CANADIANS ARE CONCERNED ABOUT THEIR AIR QUALITY, AND THEY SHOULD BE. MORE THAN HALF OF CANADIANS ARE NOW EXPOSED TO GROUND LEVEL OZONE, WHICH IS CREATED BY THE INTERACTION OF SUNLIGHT, NITROGEN OXIDES AND VOLATILE ORGANIC COMPOUNDS, OR 'NOX/VOC'S'.

Slide: NOX+VOC+Sunlight=Ozone

GROUND LEVEL OZONE, AND ITS NOX/VOC PRECURSORS THAT FORM IT ARE ONLY PART OF A GORDIAN KNOT OF COMPLEX, INTER-DEPENDENT ENVIRONMENTAL PROBLEMS, WHICH WE MUST CAREFULLY UNTANGLE AS A PLANETARY WHOLE. SO THE SOLUTIONS ARE GOING TO HAVE TO BE LOCAL, REGIONAL, NATIONAL, AS WELL AS INTERNATIONAL, AND CONSULTATIVE.

SUMMARIZING THE TRENDS IN NOX/VOC EMISSIONS:

WELL, LET'S LOOK AT THE COMPONENT PARTS OF THE OZONE PROBLEM. HERE'S THE BREAKDOWN FOR NITROGEN OXIDES OR NOX, BY SOURCE.

Slide: NOX Emission Projections 1985-2005.

AS YOU CAN SEE, THE NOX/VOC PLAN IS GOING TO GIVE US SOME BREATHING SPACE, IF YOU'LL PARDON THE PUN, TO FREEZE OUR NOX EMISSIONS AS WE HAVE AGREED TO DO UNDER THE 1988 SOFIA INTERNATIONAL NOX ACCORD. YOU CAN ALSO SEE THAT AS WE MOVE ALONG IN TIME FROM LEFT TO RIGHT UNDER THE NOX/VOC PLAN, THE PRIORITY AREAS FOR FURTHER NOX CONTROLS WILL CHANGE BETWEEN THE VARIOUS SOURCES.

SO ANTICIPATING THE NATURE OF A CHANGING ENVIRONMENTAL THREAT IS GOING TO BE VERY IMPORTANT TO THE CONTINUED SUCCESS OF THE NOX/VOC PLAN.

THE OTHER HALF OF THE OZONE STORY, VOC'S, IS A SIMILAR TALE OF A DYNAMIC PROBLEM.

Slide: VOC Emission Projections 1985-2005.

AGAIN, OVER TIME THE NATURE OF THE PROBLEM IS GOING TO CHANGE, AS SOME SOURCES DECLINE IN RELATIVE IMPORTANCE, AND OTHERS GROW IN RELATIVE TERMS.

NOW, LET'S LOOK AT THE NATIONAL OZONE PROBLEM.

Slide: Average Number of Days Per Year Exceeding the One Hour Ozone Air Quality Objective of 160 Microgrammes per Cubic Metre, or 82 Parts Per Billion.

1982-1986.

AS YOU CAN SEE, OZONE IS A CANADA-WIDE, LARGELY URBAN PROBLEM. BUT IT IS ONE THAT VARIES BY REGION, AND WHICH CROSSES REGIONS, AND EVEN BORDERS.

Slide: Ozone Concentrations

FOR EXAMPLE, THE OZONE IN THE ST. JOHN RIVER VALLEY HAS BOTH LOCAL AND LONG RANGE ROOTS, THE LATTER COMING FROM ONTARIO AND QUEBEC SOURCES, AS WELL AS FROM THE NORTHEASTERN US. THUS, CONTROLLING THE CANADIAN OZONE PROBLEM IS AN INESCAPABLY INTERNATIONAL ISSUE, AS MUCH OF THE OZONE IN THE QUEBEC CITY-WINDSOR CORRIDOR ORIGINATES IN THE US. WE MUST HAVE PARALLEL AND COORDINATED EFFORTS BY ALL OF THE PROVINCES, AND OUR AMERICAN NEIGHBORS TO SOLVE THE OZONE PROBLEM.

CCME OBJECTIVES:

Slide: CCME Decision - October 6, 1988

THIS IS WHY ON OCTOBER 6, 1988 THE CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT, OR 'CCME' DECIDED TO ATTACK CANADA'S NATION-WIDE OZONE PROBLEM WITH A NATION-WIDE CONSULTATIVE AND COORDINATED NOX/VOC MANAGEMENT PLAN. THIS IS THE ONLY WAY TO MEET OUR DOMESTIC OBJECTIVES FOR AIR QUALITY IN CANADA, AND TO MEET OUR INTERNATIONAL OBLIGATIONS.

NOX/VOC PLAN CONSULTATIONS HAVE INCLUDED, AND WILL CONTINUE TO INCLUDE THE FEDERAL, PROVINCIAL AND MUNICIPAL GOVERNMENTS, INDUSTRIES, ENVIRONMENTAL GROUPS, AND THE PUBLIC. THE CONSULTATIONS WILL SET OUT OPTIONS AND CHOICES, SOME OF WHICH ARE COMPLEX. THE CONSULTATIONS MUST ALSO BE INTEGRATED WITHIN THE LARGER PICTURE OF ENVIRONMENTAL PROTECTION, THE FEDERAL GOVERNMENT'S ENVIRONMENTAL GREEN PLAN, AND FIT WITHIN THE INTERNATIONAL FRAMEWORK.

REQUIRED REDUCTIONS:

Slide: Estimated 03 Reduction Needed

THE SCOPE OF OZONE REDUCTIONS REQUIRED TO SAFEGUARD AIR QUALITY IS EXTENSIVE. MEETING THE EIGHTY-TWO PARTS PER BILLION STANDARD WILL REQUIRE CONSIDERABLE EFFORT IN THE LOWER FRASER VALLEY, THE WINDSOR-QUEBEC CITY CORRIDOR, AND IN THE LOWER ST. JOHN RIVER VALLEY. IN ORDER TO MEET THESE GOALS THE NOX/VOC PLAN HAS HAD TO ATTACK A BROAD RANGE OF NOX/VOC SOURCES, A RANGE THAT WILL CHANGE IN IMPORTANCE OVER TIME AS THE PLAN TAKES EFFECT.

NOW, IN THE OVERALL SCHEME OF THINGS, THE PLAN IS NOT GOING TO CHANGE THE REGIONAL BALANCE OF WHERE MOST OF THE NOX/VOC EMISSIONS IN CANADA COME FROM.

Slide: NOX Emission Projections, NFLD-NWT, 1985, 1995, 2005.

NOR WILL THE PLAN CHANGE THE REGIONAL DISTRIBUTION OF VOC EMISSIONS.

Slide: VOC Emission Projections, NFLD-NWT, 1985, 1995, 2005.

3 PHASE DRAFT PLAN:

HOWEVER, IT SHOULD BE SEEN THAT THE NATURE OF THE PROBLEM REQUIRES A RESPONSE BY REGIONS, BY PROVINCES, AND ON THE NATIONAL LEVEL. THIS RESPONSE WILL HAVE TO BE FLEXIBLE IN ORDER TO DEAL WITH NEW, EMERGING ENVIRONMENTAL PROBLEMS AS TIME, AND THE PLAN, MOVES ON.

PHASE ONE OF THE NOX/VOC PLAN IS THE PRESENT DRAFT. PHASE ONE IS INTENDED TO SET UP A STRONG PREVENTIVE PROGRAM NATIONALLY, AND A COMPREHENSIVE SET OF CLEAN UP OR REMEDIAL MEASURES IN THE PRIME OZONE PROBLEM AREAS. THE NEXT PHASE OF THE PLAN, PHASE TWO, WILL INCORPORATE LESSONS FROM PHASE ONE, AND ADVANCES IN THE SCIENTIFIC DATA BASE, AND WILL APPEAR IN NINETEEN NINETY-FOUR. NINETEEN NINETY-SEVEN IS SET AS THE DATE FOR PHASE THREE OF THE PLAN, IF IT IS STILL NECESSARY.

ACHIEVEMENTS AND PERCENTAGE REDUCTIONS:

Slide: Overview of Plan.

THE PLAN'S OBJECTIVE IS TO REDUCE OZONE LEVELS IN THE AIR TO EIGHTY-TWO PARTS PER BILLION BY THE YEAR TWO THOUSAND AND FIVE.

PHASE ONE, OR THE CURRENT PLAN, HAS FIFTY-EIGHT DETAILED INITIATIVES, TO BOTH CLEAN UP NOX/VOC'S, AND TO PREVENT THEIR EMISSION.

BECAUSE THE OZONE PROBLEM HAS DIFFERENT SOURCES IN DIFFERENT REGIONS THE PROPOSED NOX/VOC PLAN PROVIDES FOR THE IMPLEMENTING PROVINCIAL OR TERRITORIAL GOVERNMENTS TO SUBSTITUTE "ENVIRONMENTALLY EQUIVALENT" ALTERNATIVES TO THE PLAN THROUGH A CCME APPROVAL PROCESS.

THE OBJECTIVE OF ALL THIS, IS TO CLEAN UP THE AIR.

Slide: Overview of Plan (Contd)

AND IMPLEMENTATION OF THE PLAN WILL DO THIS, BY REDUCING OZONE PEAKS, OR EPISODES BY FIFTEEN TO THIRTY-FIVE PER CENT, WHILE REDUCING THE NUMBER OF HOURS THE PUBLIC IS EXPOSED TO OZONE LEVELS ABOVE THE EIGHTY-TWO PARTS PER BILLION STANDARD

BY FORTY TO ONE-HUNDRED PER CENT BY THE YEAR TWO THOUSAND AND FIVE. IT WILL ALSO REDUCE TOXIC VOC VAPOURS BY TWENTY TO SIXTY PER CENT, AND REDUCE CARBON DIOXIDE BY SIX PER CENT.

WHAT ABOUT THE COST? WELL, IT IS NOT GOING TO BE CHEAP. BUT, ON THE OTHER HAND, THE BILLS ARE JUST STARTING TO COME IN FOR THE IMPACT OF OZONE ON CROPS, WHERE IN ONTARIO ALONE, DAMAGES AMOUNT TO SEVENTY MILLION DOLLARS A YEAR. PUBLIC HEALTH COSTS OF OZONE EXPOSURE HAVE NOT YET BEEN FIXED, BUT ARE LIKELY TO BE SUBSTANTIAL.

HOW WILL THE COST OF CLEANING UP THE AIR, AND PREVENTING OZONE FORMATION BE SHARED? WELL, THE PLAN'S EMISSION REDUCTION COSTS FALL UPON THREE CATEGORIES OF NOX/VOC SOURCES. FORTY-EIGHT PER CENT OF THE EMISSION REDUCTION COSTS WILL BE BORNE BY THE MOTOR-VEHICLE SECTOR, TWENTY-ONE PER CENT BY POWER GENERATION, AND TWELVE PERCENT BY PAINTS AND COATINGS. THAT'S HOW THE EIGHT-HUNDRED AND FIFTY-FIVE MILLION DOLLAR A YEAR EMITTER'S COST IS BROKEN DOWN BY SOURCE.

PRESENTING THE PLAN TO THE MINISTERS:

THE DECISION-MAKING PROCESS BEGAN IN APRIL 1988 WHEN THE CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT OR CCME ASKED THE FEDERAL-PROVINCIAL LONG RANGE TRANSPORT OF AIR POLLUTANTS OR "F/P LRTAP" AND ITS STEERING COMMITTEE TO

DEVELOP A NOX/VOC MANAGEMENT PLAN BY THE FALL OF 1990. LRTAP STEERING COMMITTEE ASKED ENVIRONMENT CANADA TO SET UP A NOX/VOC OFFICE. THIS OFFICE HELPS TO MANAGE THE CONSULTATION PROCESS AIMED AT DEVELOPING DRAFTS OF THE PLAN, AND CIRCULATES THEM FOR COMMENTARY. THE OFFICE ASSISTS THE PLAN'S WRITER WHO INCORPORATES MANY OF THESE COMMENTS INTO THE FINAL DRAFT FOR THE LRTAP STEERING COMMITTEE.

FOR THE CONSULTATIONS TO WORK, THEY WILL HAVE TO INVOLVE ALL OF US AS PROFESSIONALS, AND AS INDIVIDUALS.

I SAY "ALL OF US" BECAUSE ALL OF US IN INDUSTRY AND GOVERNMENT AND AS INDIVIDUALS, ARE PART OF THE GROUND LEVEL OZONE PROBLEM, AS WELL AS ITS SOLUTION. PART OF THE SOLUTION INVOLVES CHANGING THE WAY WE MAKE ENVIRONMENTAL DECISIONS, RE-THINKING OUR LIFESTYLE.

ENVIRONMENTAL DECISIONS ARE MADE BY CONSULTING AND COORDINATING EFFECTIVELY, IN ORDER TO ARRIVE AT A CONSENSUS FOR EFFECTIVE ENVIRONMENTAL ACTION. THIS IS WHAT THE PROPOSED NOX/VOC PLAN DOES. THIS IS ALSO WHAT THE GREEN PLAN CONSULTATIONS HAVE DONE.

WHAT'S UNIQUE ABOUT THE NOX/VOC PLAN CONSULTATIONS IS THAT THEY ARE AN OPEN OR A 'TRANSPARENT' PROCESS. EACH DRAFT OF THE PLAN HAS BEEN SEEN BY THE STAKEHOLDERS. AND THAT INCLUDES THE FINAL VERSION THAT WILL BE SENT TO THE CCME MINISTERS BY THE

LRTAP STEERING COMMITTEE IN NOVEMBER. THIS LAST POINT IS A REAL BREAK WITH TRADITION. IT MEANS THAT THE STAKEHOLDERS---AND THAT MEANS ALL OF US---WILL KNOW WHAT CHANGES WERE MADE TO THE PLAN BEFORE THE PLAN GOES TO THE MINISTERS. THEN THE MINISTERS WILL BE FREE TO MAKE THE NECESSARY POLITICAL DECISIONS IN AN INDEPENDENT MANNER.

TOGETHER, WE ARE FINDING THE CONSENSUS FOR REALISTIC AND EFFECTIVE ENVIRONMENTAL ACTION. R.W. SLATER, ENVIRONMENT CANADA'S ASSISTANT DEPUTY MINISTER FOR PLANNING TOLD THIS CONFERENCE LAST YEAR THAT "IF WE CHANGE THE WAY WE MAKE DECISIONS, WE WILL CHANGE THE DECISIONS WE MAKE."

CONSIDERATIONS:

Slide: Atmospheric Issues: Linkages in Control

OZONE IS A NATIONAL AND AN INTERNATIONAL PROBLEM. AND IT'S ONLY ONE PART OF A WORLD-WIDE SPECTRUM OF AIR POLLUTION PROBLEMS. THIS SPECTRUM INCLUDES GLOBAL THREATS LIKE CARBON DIOXIDE, WHICH PRODUCES GLOBAL WARMING, DESERTIFICATION AND SEA-LEVEL INCREASES; HIGH-ALTITUDE OZONE LAYER DEPLETION, WHICH LEADS TO HARMFUL ULTRAVIOLET RAYS STRIKING THE EARTH; ACID PRECIPITATION; AND THE FORMATION OF GROUND LEVEL OZONE OR SMOG.

EARLY ON I MENTIONED THAT WE AS A PLANET FACE AN INTERLINKED GORDIAN KNOT OF POLLUTION PROBLEMS. AS YOU CAN SEE, UNRAVELING THIS KNOT IS NOT GOING TO BE EASY.

THE GOOD NEWS IS THAT AS WE ATTACK ONE SOURCE, SUCH AS BY REDUCING NOX/VOC EMISSIONS FROM TRANSPORTATION, WE WILL ALSO BE REDUCING OTHER EMISSIONS, SUCH AS AIR TOXICS, GREEN HOUSE GASES, AND ACID RAIN.

WHAT'S AT WORK HERE IS A SORT OF MULTIPLIER EFFECT, WHEREBY ACTIONS TAKEN TO ADDRESS THE NOX/VOC PROBLEM MAY ALSO HAVE BENEFICIAL EFFECTS ON SOURCES COMMON TO OTHER POLLUTANTS.

WHAT THIS MAY MEAN, IS THAT REMEDIAL ACTIONS, AND PREVENTATIVE ACTIONS MAY WORK BETTER THAN IS FORECAST---OR THEY MAY RUN INTO UNFORESEEN SNAGS. IT IS THE REALITY OF THIS INTERDEPENDENT COMPLEXITY, AND ITS SCIENTIFIC UNCERTAINTY, WHICH DEMANDS THAT THE NOX/VOC PLAN BE RESPONSIVE TO CHANGE OVER TIME, AND FLEXIBLE.

THIS MEANS THAT SOLVING THE NOX/VOC AIR QUALITY PROBLEM IS GOING TO HAVE TO BE CONSULTATIVE, SIMPLY BECAUSE CANADIAN AND INTERNATIONAL ENVIRONMENTAL PROTECTION GOALS WILL CHANGE AS GAPS ARE FILLED IN THE SCIENTIFIC DATA BASE. SO THERE WILL BE NEW REGULATIONS, AND NON-REGULATORY MEASURES AS THE SCIENTIFIC PICTURE BECOMES CLEARER OVER TIME. BUT THIS WILL BE DONE IN CONSULTATION WITH ALL OF YOU.

IT WILL ALSO BE DONE IN CONSULTATION WITH THE GENERAL CANADIAN PUBLIC, AS THE GREEN PLAN HAS MADE CLEAR. THERE MUST BE A GOVERNMENT-WIDE FRAMEWORK FOR ANTICIPATING, AVOIDING, AND IF NECESSARY, PRIORITIZING ENVIRONMENTAL PROBLEMS. THE GREEN PLAN RECOGNIZES THAT IF ENVIRONMENTAL PROBLEMS ARE DYNAMIC, THEN SO MUST BE THE SOLUTIONS TO THEM.

THE NOX/VOC PLAN LIMITS FOR VOC EMISSIONS MAY BE AN EXAMPLE OF A DYNAMIC RESPONSE TO A DYNAMIC PROBLEM WHICH MAY BE DEFINED BY RADICAL CHANGES IN THE SCIENTIFIC DATA BASE. THE PLAN CALLS FOR SUBSTANTIAL REDUCTIONS IN VOC'S. HOWEVER, SOME OF THESE VOC'S MAY BE DECLARED TO BE TOXIC UNDER THE CANADIAN ENVIRONMENTAL PROTECTION ACT, OR 'CEPA', OR BY PROVINCIAL LEGISLATION.

CEPA PROVIDES FOR A RIGOROUS ASSESSMENT PROCEDURE FOR A PRIORITIZED LIST OF POSSIBLY TOXIC SUBSTANCES. THIS CEPA 'CRADLE-TO-GRAVE' STRATEGY AIMS TO AVOID THE CREATION AND USE OF NEW TOXIC SUBSTANCES, AND TO IDENTIFY AND REDUCE PUBLIC EXPOSURE TO EXISTING ONES. THUS, THERE ARE ABOUT 20 VOC'S TO BE ASSESSED FOR TOXICITY UNDER THIS CEPA PRIORITY SUBSTANCE LIST, OR P.S.L. .

SOME OF THESE VOC'S ON THE CEPA PSL WILL UNDOUBTEDLY BE FOUND TO BE TOXIC, AND MAY HAVE TO BE SUBSTANTIALLY REDUCED, OR EVEN ELIMINATED. IT MAY JUST BE THAT THE 25% VOC REDUCTIONS IN THE NOX/VOC PLAN WILL NOT BE ADEQUATE CONTROLS ON SPECIFIC

VOC'S THAT ARE FOUND TO BE TOXIC. SO, SOME OF THE NOX/VOC PLAN CUTS MAY HAVE TO BE RATCHETED UP TO 95% CUTS FOR SOME SPECIFIC VOC'S, DEPENDING ON THE P.S.L. FINDINGS.

HOW WILL WE MEET THESE NEW TARGETS? WELL, AGAIN, AS THE SCIENTIFIC DATA BASE EVOLVES, AND AS THE REGULATIONS MUST BE UPDATED, THE ECONOMICS OF ENVIRONMENTAL MEASURES, AND THE CONCEPT OF FLEXIBILITY IN IMPLEMENTATION WILL HAVE TO BE PART OF THE NEW CONSENSUS WE WILL ALL FORM THROUGH CONSULTATIONS. THE TRADEOFFS BETWEEN ECONOMIC IMPACT, AND THE USE OF ALTERNATIVE CONTROLS OR NON-REGULATORY MEASURES WILL BE OUT IN THE OPEN DURING THESE CONSULTATIONS.

CLEARLY, THE RESPONSE TO THESE COMPLEX AND INTERDEPENDENT ENVIRONMENTAL ISSUES MUST BE AS SIMPLE AS POSSIBLE, AND AS COST EFFECTIVE AS POSSIBLE. INDUSTRY DOES NOT WANT TO BE BURDENED WITH AN OVERLY COMPLICATED WEB OF UNNECESSARILY COSTLY ENVIRONMENTAL REGULATIONS. NEITHER DO WE.

FEASIBILITY STUDY FOR EMISSIONS TRADING:

IN ORDER TO ADDRESS THIS CONCERN OF INDUSTRY, ONE OF THE NON-REGULATORY MEASURES THAT ENVIRONMENT CANADA IS EXPLORING IS THE FEASIBILITY OF EMISSIONS TRADING, WHICH IS MENTIONED IN THE GREEN PLAN.

EMISSIONS TRADING IS ESSENTIALLY A NON-REGULATORY ARRANGEMENT, WHEREBY POLLUTION CONTROL IS ACCOMPLISHED WITHIN THE INDUSTRIES INVOLVED, THROUGH A SYSTEM OF TRADABLE PERMITS. INDUSTRIES THAT HAVE ALREADY MET THE ENVIRONMENTAL TARGET CAN TRADE THEIR PERMIT, FOR A PRICE, TO INDUSTRIES WHICH HAVE YET TO MEET THE TARGET. THE FINANCIAL IMPETUS FOR MEETING THE ENVIRONMENTAL TARGET IS THUS PUT ON INDUSTRY. THE INDUSTRIES THAT POLLUTE MORE, PAY TO BUY PERMITS FROM THOSE WHO POLLUTE LESS.

EMISSIONS TRADING WILL ONLY WORK IF INDUSTRY COMES FORWARD WITH WORKABLE NON-REGULATORY INITIATIVES. SO ENVIRONMENT CANADA NEEDS YOUR HELP TO DEVELOP AN ALTERNATIVELY-FOCUSED, PREVENTATIVE APPROACH, THAT MOVES TOWARD DEVELOPING NEW WAYS OF MEETING ENVIRONMENTAL QUALITY TARGETS, IN CONSULTATION WITH ALL STAKEHOLDERS.

I SUPPOSE AS A GOVERNMENT REGULATOR, I'M ENTITLED TO SAY THAT NOT ALL REGULATIONS ARE BAD. PARTICULARLY WHEN THEY ARE DEVELOPED IN CONSULTATION WITH STAKEHOLDERS. I AM ALSO IN GOOD COMPANY IN THINKING THIS WAY, AS NOT ONLY DOES OUR ASSOCIATE DEPUTY MINISTER LORETTE GOULET HOLD THIS VIEW, BUT SO DOES A GROWING TREND OF THOUGHT IN ECONOMIC LITERATURE.

BY THIS I MEAN TO REFER TO MICHAEL PORTER'S BOOK THE COMPETITIVE ADVANTAGE OF NATIONS. I PROMISE NOT TO RECITE ALL 800 PAGES OF IT HERE.

WHAT IS CRUCIAL ABOUT PORTER'S BOOK IS THAT HE HOLDS THAT ENLIGHTENED NATIONAL REGULATIONS WHICH ANTICIPATE THE NEXT WAVE OF INTERNATIONAL HEALTH, SAFETY OR ENVIRONMENTAL STANDARDS, GIVE INDUSTRIES THE PUSH TO DEVELOP THEIR COMPETITIVE ADVANTAGE BY UPGRADING TO MEET NEW STANDARDS.

PERHAPS JUST AS IMPORTANTLY, PORTER SAYS IN A STUDY OF TEN INDUSTRIALIZED COUNTRIES THAT THE LAX ENVIRONMENTAL POLICIES OF THE REAGAN ADMINISTRATION ACTUALLY HURT U.S. COMPETITIVE ADVANTAGE. PORTER SAYS THAT A NATIONAL ECONOMY CANNOT AFFORD TO LAG BEHIND THE REST OF THE COMPETITIVE WORLD IN THESE REGULATIONS. CLEARLY, CANADIANS DON'T WANT TO BE SEEN AS ENVIRONMENTAL LAGGARDS.

AND WE WON'T BE.

AS WE CANADIANS GET A HANDLE ON SOME OF THE ENVIRONMENTAL CONCERNS EXPRESSED BY ALL OF US IN THE GREEN PLAN, WE ARE GOING TO HAVE TO HAVE MORE CONSULTATIONS ALONG THE LINES OF THE CONTINUING NOX/VOC EFFORTS. WHAT WE'LL BE DOING, NOW, AND IN THE FUTURE, IS DEVELOPING A A BROAD PUBLIC CONSENSUS ON THE SORT OF ENVIRONMENTAL PROTECTION THAT CANADIANS WANT.

IF ALL OF THIS SOUNDS A BIT DAUNTING, IT IS.

THE CHALLENGE FOR US AS WE MOVE TOWARDS THE THIRD MILLENNIA IS TO WORK SMARTER TOGETHER, TO DECIDE WHAT WE THINK IS

IMPORTANT TO US AS A SOCIETY, AND TO BE OPEN AND RECEPTIVE TO CHANGE.

THERE WON'T BE A HANDFUL OF HEROES IN THE STRUGGLE FOR A SUSTAINABLE ENVIRONMENT. RATHER, THE PATH TO A SUSTAINABLE FUTURE IS GOING TO BE MADE UP OF A LOT OF CAREFULLY THOUGHT OUT ACTIONS BY INTERDEPENDENT ACTORS AND EVEN INDIVIDUALS, ALL AWARE OF THEIR IMPACT ON EACH OTHER, AND ON THE GLOBAL WHOLE.

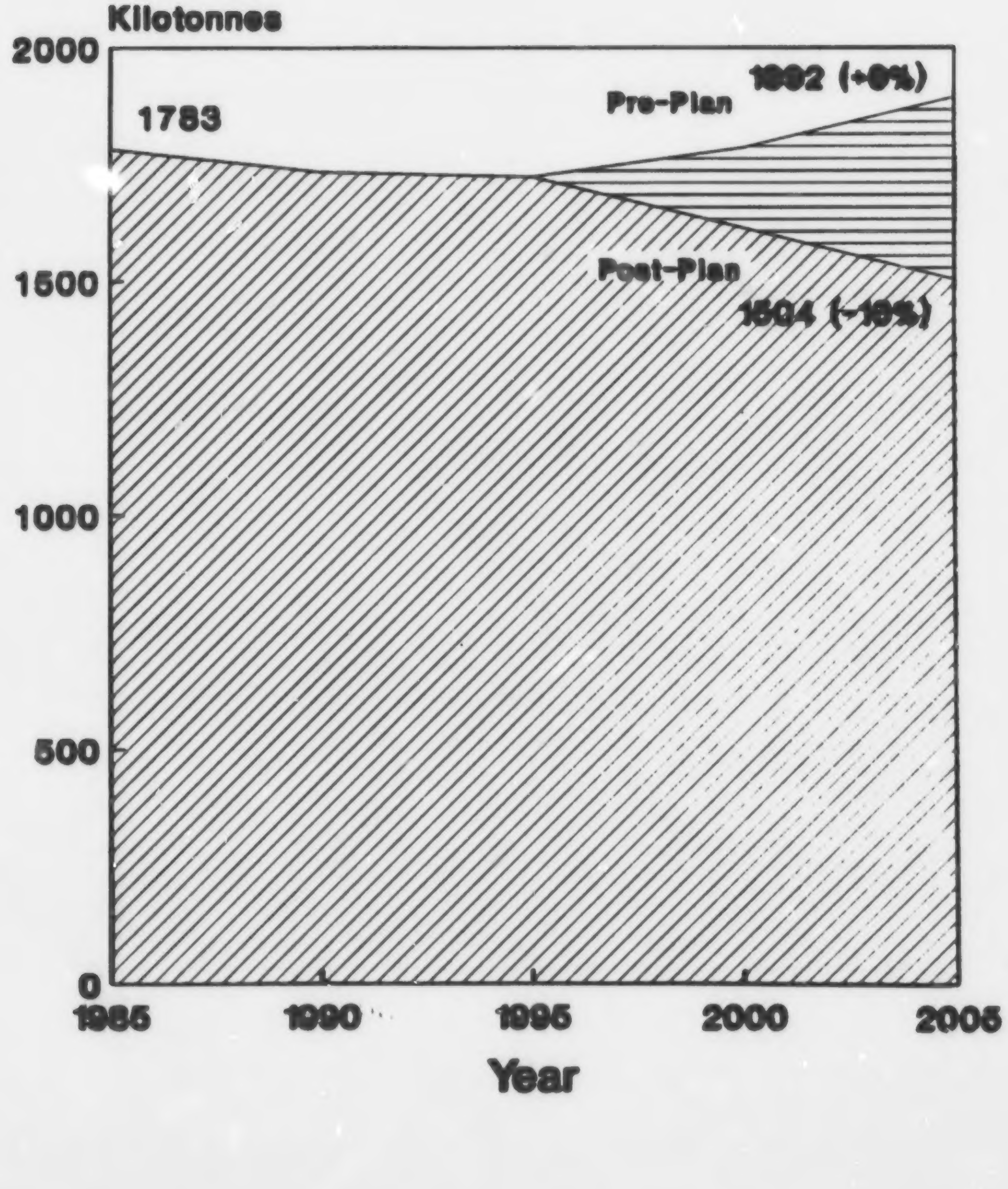
THROUGHOUT MY SPEECH I'VE REFERRED TO OUR TASK TOGETHER AS THAT OF UNRAVELING AN ENVIRONMENTAL GORDIAN KNOT. MAYBE TO BE MORE HONEST, I SHOULD HAVE SAID 'KNOTS'--PLURAL. THERE ARE SOME DAYS WHEN I, AND I THINK MAYBE SOME OF YOU, FEEL LIKE GULLIVER, OF JONATHAN SWIFT'S BOOK GULLIVER'S TRAVELS, THE SUDDENLY GIANT MORTAL WASHED ASHORE IN THE TINY LAND OF LILLIPUT. GULLIVER AWAKES TO FIND HIMSELF TIED DOWN WITH A THOUSAND TINY ROPES. FROM MY POINT OF VIEW, NOT EVERY ONE OF THOSE TINY ROPES IS TIED WITH A GORDIAN KNOT. BUT TAKEN TOGETHER, THOSE TINY ROPES, AND THEIR KNOTS, CAN IMMOBILIZE US ALL, IF THEY'RE NOT UNTIED, ONE BY ONE.

PERHAPS OUR ENVIRONMENT IS A BIT LIKE GULLIVER ON THE BEACH.

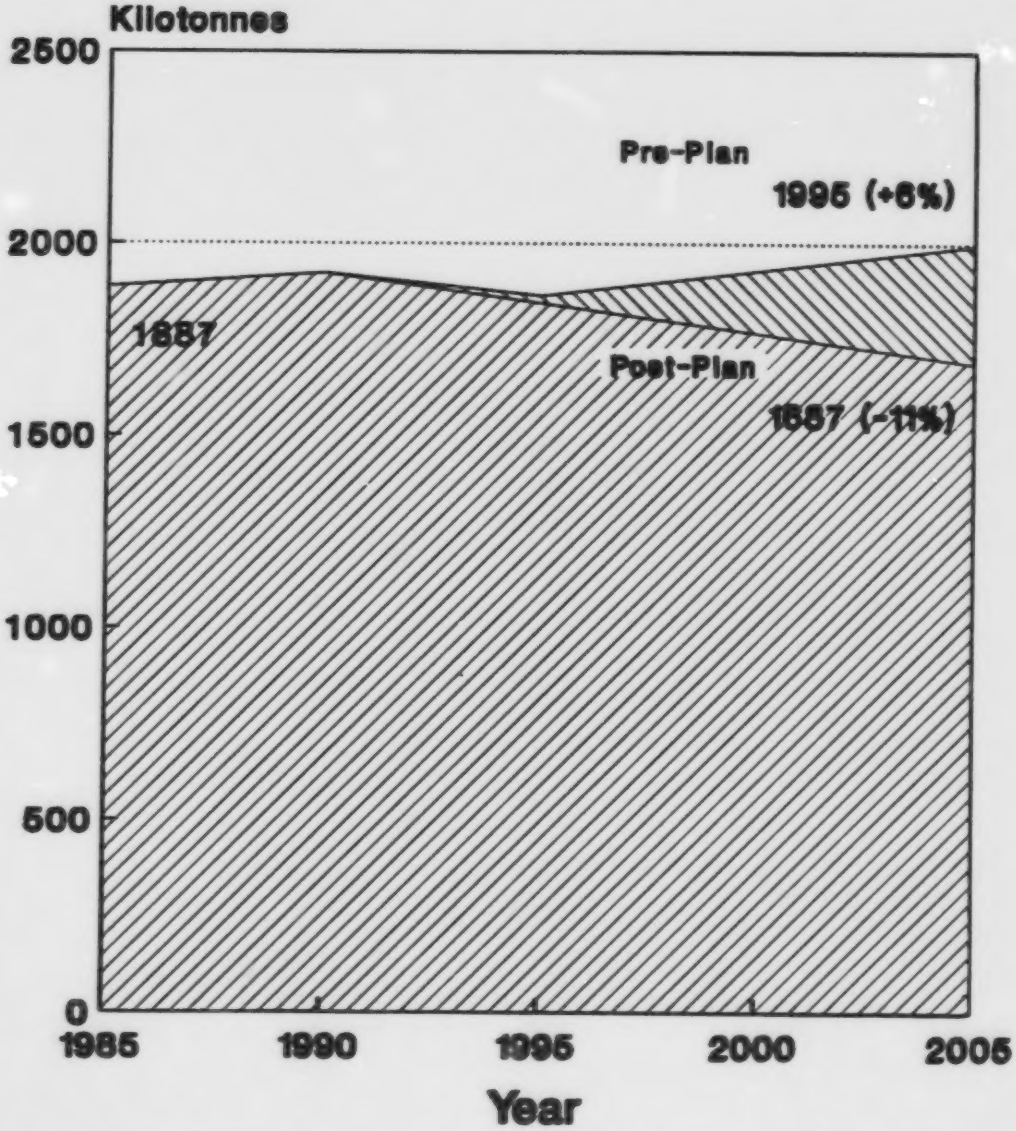
WE ARE ALL TRYING TO FIND THE TINY KNOTS ON OUR LOCAL AND GLOBAL ENVIRONMENTAL STRINGS; THE CHALLENGE IS GOING TO BE IN WORKING TOGETHER TO UNTIE THEM.

THANK YOU.

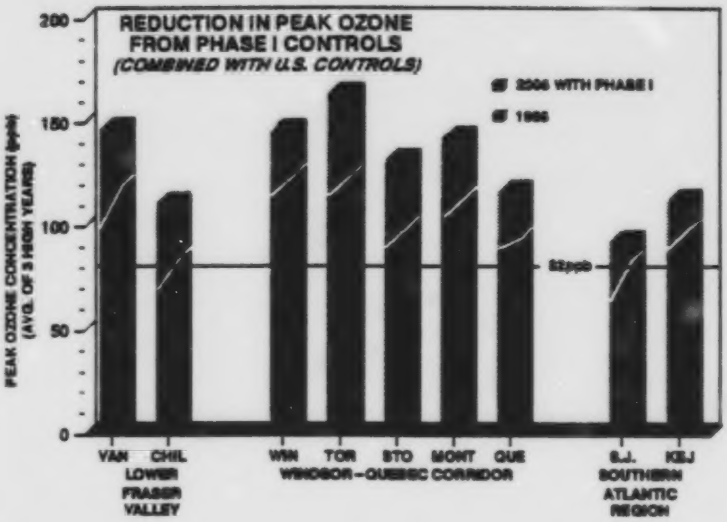
VOC Emission Reduction: 2005
Canada

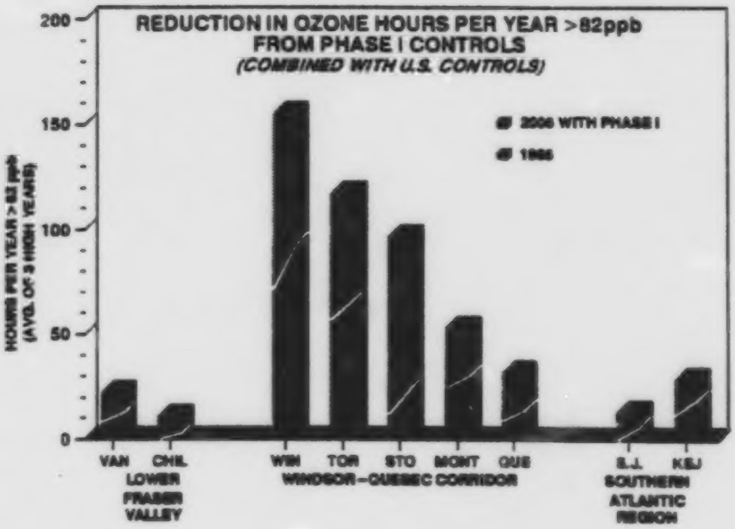


NO$_x$ Emission Reduction: 2005
Canada



August 2, 1990


REDUCTION IN PEAK OZONE
FROM PHASE I CONTROLS
(COMBINED WITH U.S. CONTROLS)
2005 WITH PHASE I
1985
PEAK OZONE CONCENTRATION (ppb)
(AVG. OF 3 HIGH YEARS)
200
150
100
50
0
82ppb
VAN
CHIL
LOWER
FRASER
VALLEY
WIN
TOR
STO
MONT
QUE
WINDSOR–QUEBEC CORRIDOR
S.J.
KEJ
SOUTHERN
ATLANTIC
REGION


REDUCTION IN OZONE HOURS PER YEAR >82ppb
FROM PHASE I CONTROLS
(COMBINED WITH U.S. CONTROLS)
2005 WITH PHASE I
1985
HOURS PER YEAR > 82 ppb
(AVG. OF 3 HIGH YEARS)
200
150
100
50
0
VAN
CHIL
LOWER
FRASER
VALLEY
WIN
TOR
STO
MONT
QUE
WINDSOR–QUEBEC CORRIDOR
S.J.
KEJ
SOUTHERN
ATLANTIC
REGION

OVERVIEW OF PLAN

- GOAL - 82 ppb BY 2005
- 3 PHASES TO REACH 82 ppb
- PHASE I (CURRENT PLAN)
    - 58 Initiatives
    - Prevention (National)
    - Remediation (Regional)
    - Lead Agencies
- ALTERNATIVES TO PHASE I "BASE PLAN"

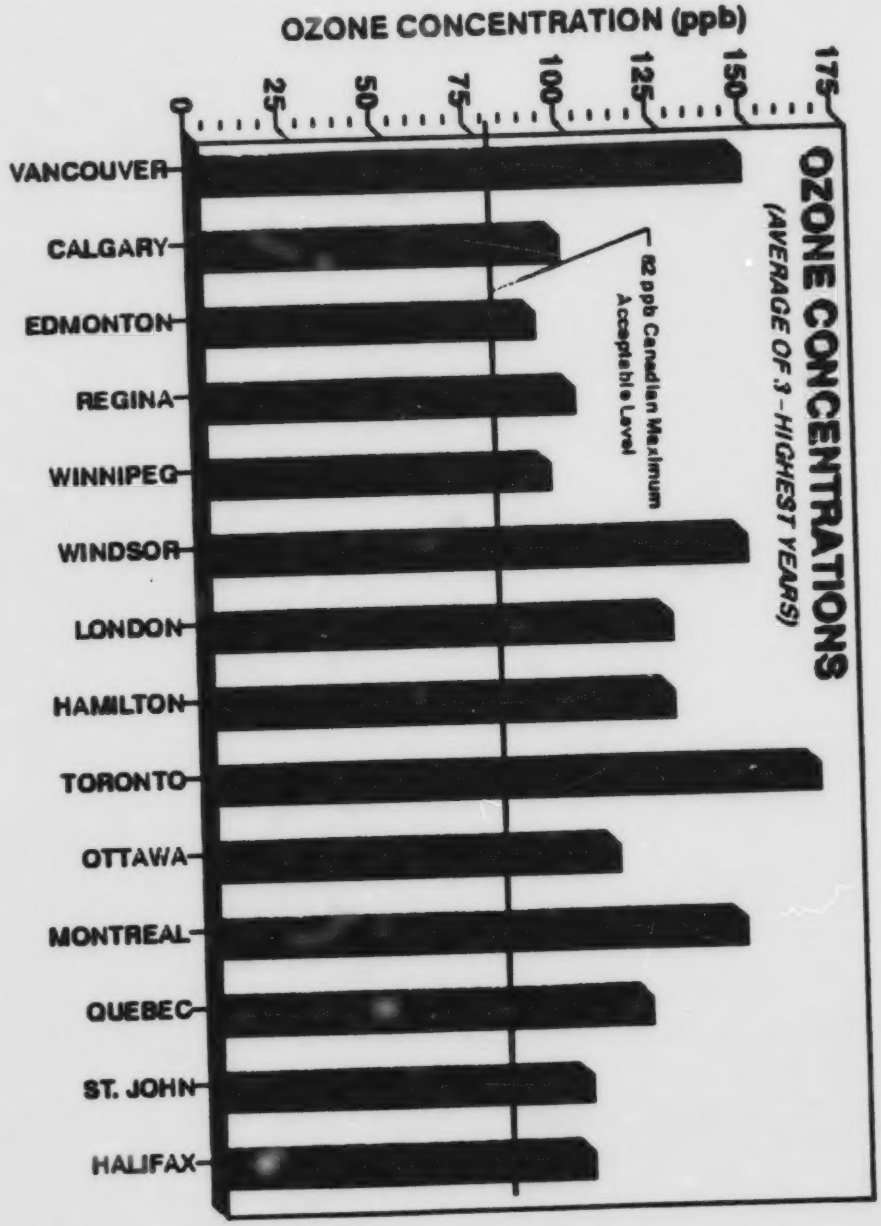
OVERVIEW OF PLAN (Contd)

- EFFECTIVENESS
  - *Redn. in O3 Peaks 15 to 35 %*
  - *Redn. in O3 Hours › 82 ppb 40 to 100 %*
  - *Redn. in Toxic VOCs 20 to 60 %*
  - *Redn. in CO2 6%*
- COST
  - *To Emitters $ 855 M/Year*
  - *To Gov'ts $ 100 M (5 Years)*
- RECOMM'NS TO MINISTERS

90/08/08

ESTIMATED O_3 REDUCTION NEEDED

REGION	O_3 REDUCTION NEEDED
LFV	> 40 %
WQC	
- Winsor - Oshawa	35 - 50 %
- Oshawa - Quebec City	30 - 40 %
SJA	30 %



OZONE CONCENTRATIONS
(AVERAGE OF 3-HIGHEST YEARS)

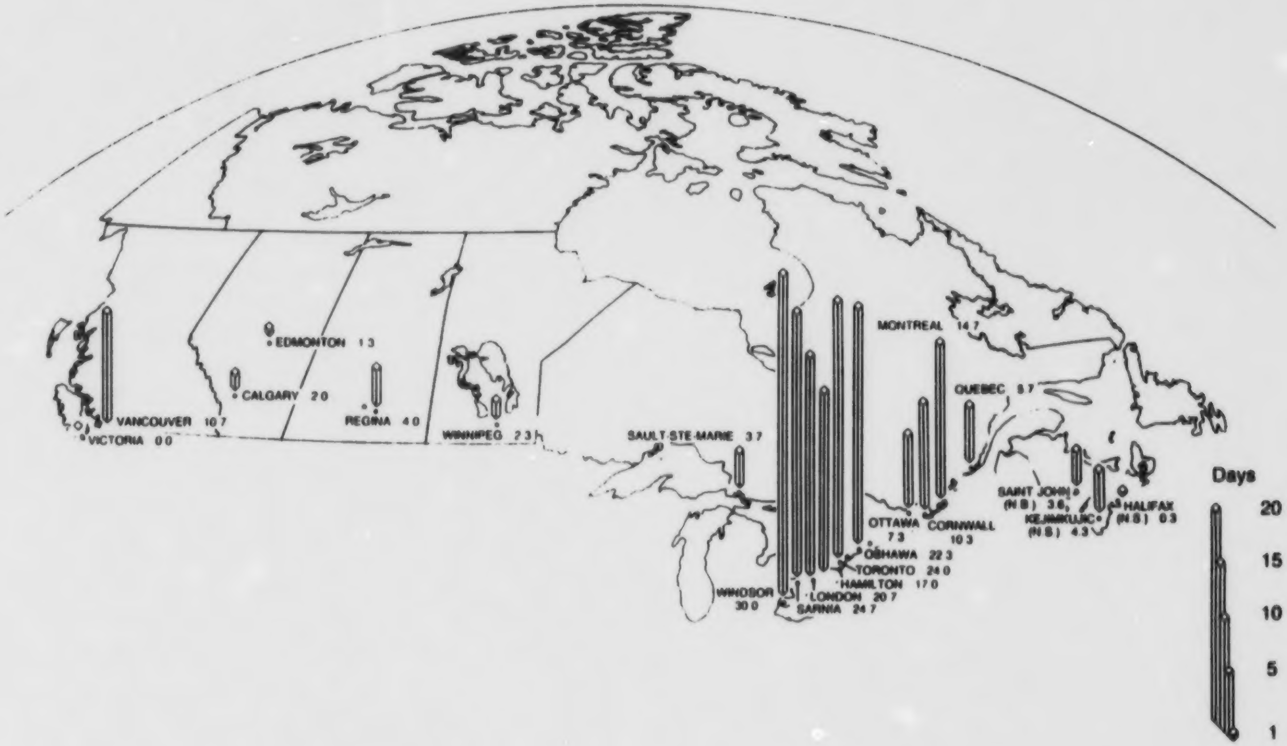
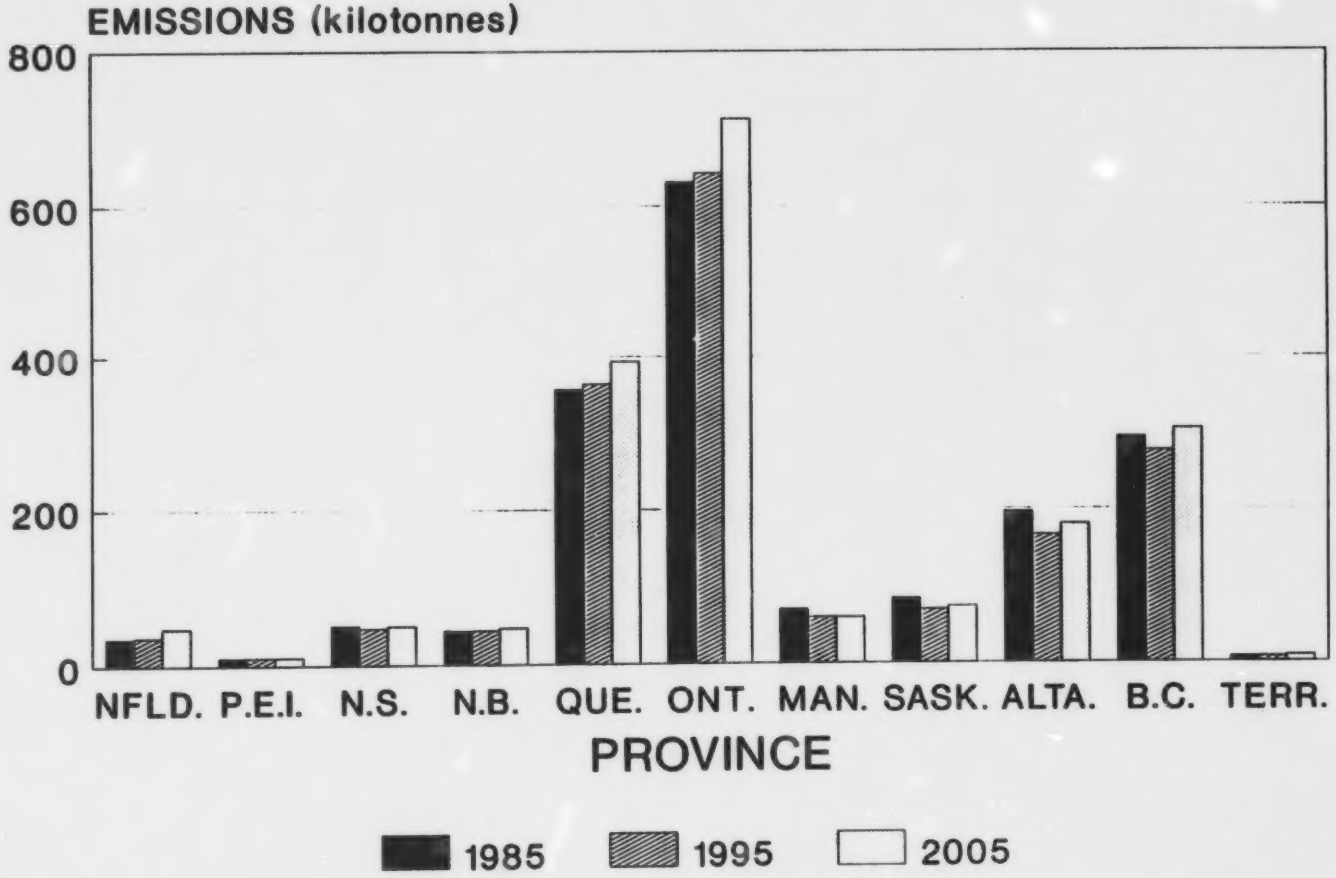
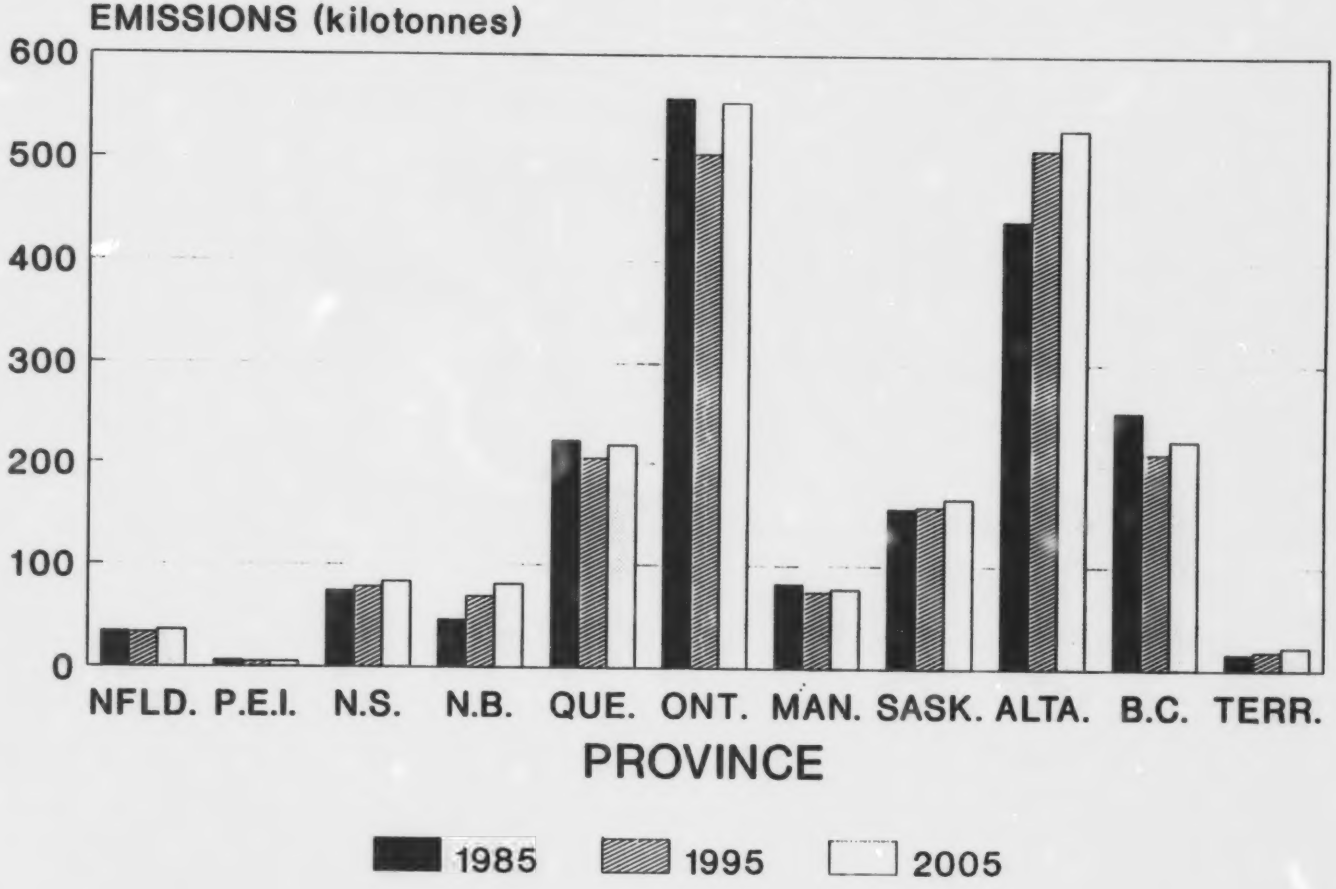

VANCOUVER 10.7
VICTORIA 0.0
EDMONTON 1.3
CALGARY 2.0
REGINA 4.0
WINNIPEG 2.3
SAULT-STE-MARIE 3.7
WINDSOR 30.0
SARNIA 24.7
LONDON 20.7
HAMILTON 17.0
TORONTO 24.0
OSHAWA 22.3
OTTAWA 7.3
CORNWALL 10.3
MONTREAL 14.7
QUEBEC 5.7
SAINT JOHN (N.B.) 3.6
KEJIMKUJIC (N.S.) 4.3
HALIFAX (N.S.) 0.3
Days
20
15
10
5
1

FIGURE 2. DAYS PER YEAR EXCEEDING THE 1-HOUR OZONE AIR QUALITY OBJECTIVE (82 ppb) — AVERAGE OF 3 HIGHEST YEARS 1983–1989

VOC EMISSION PROJECTIONS

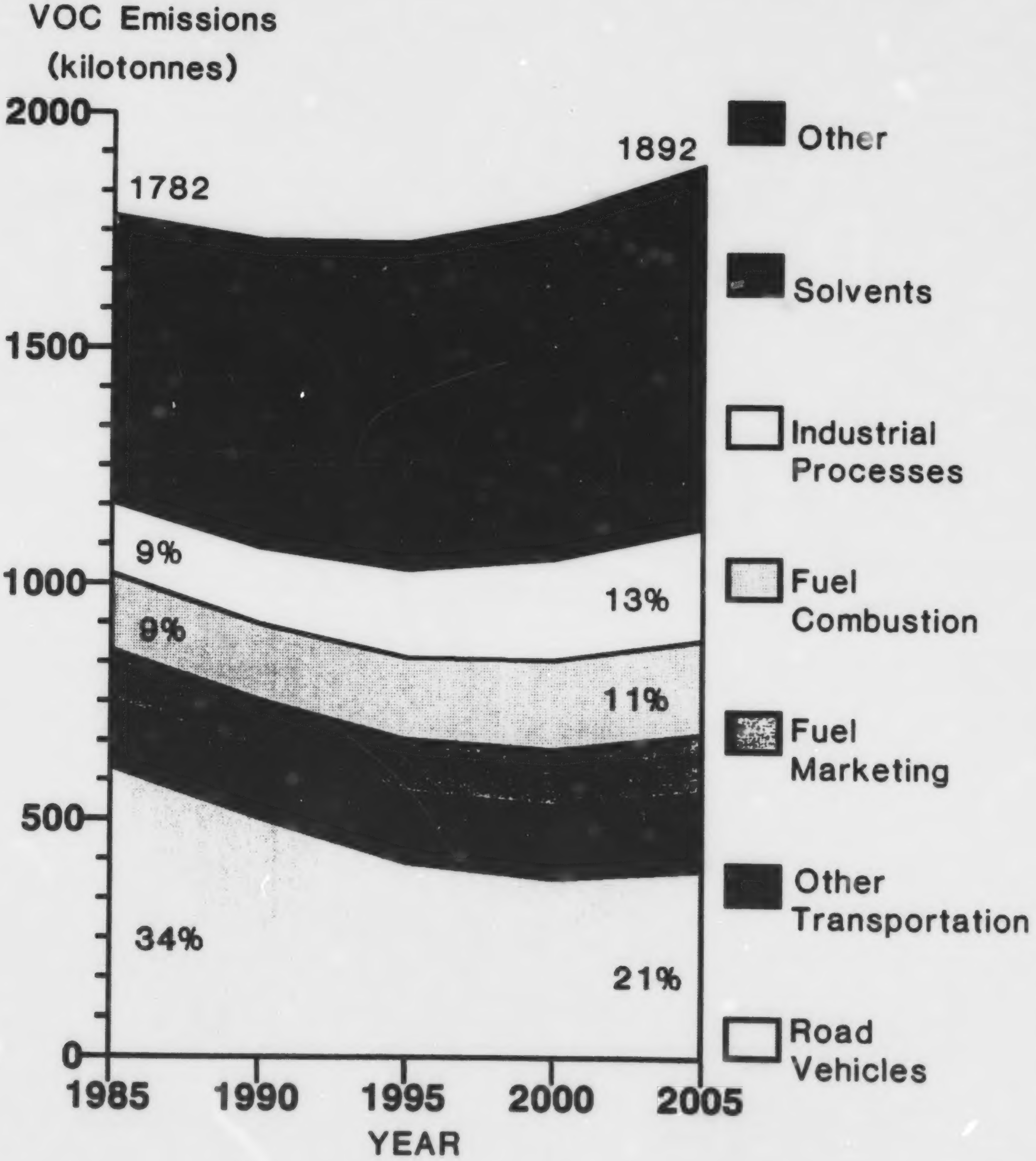


NOX EMISSION PROJECTIONS

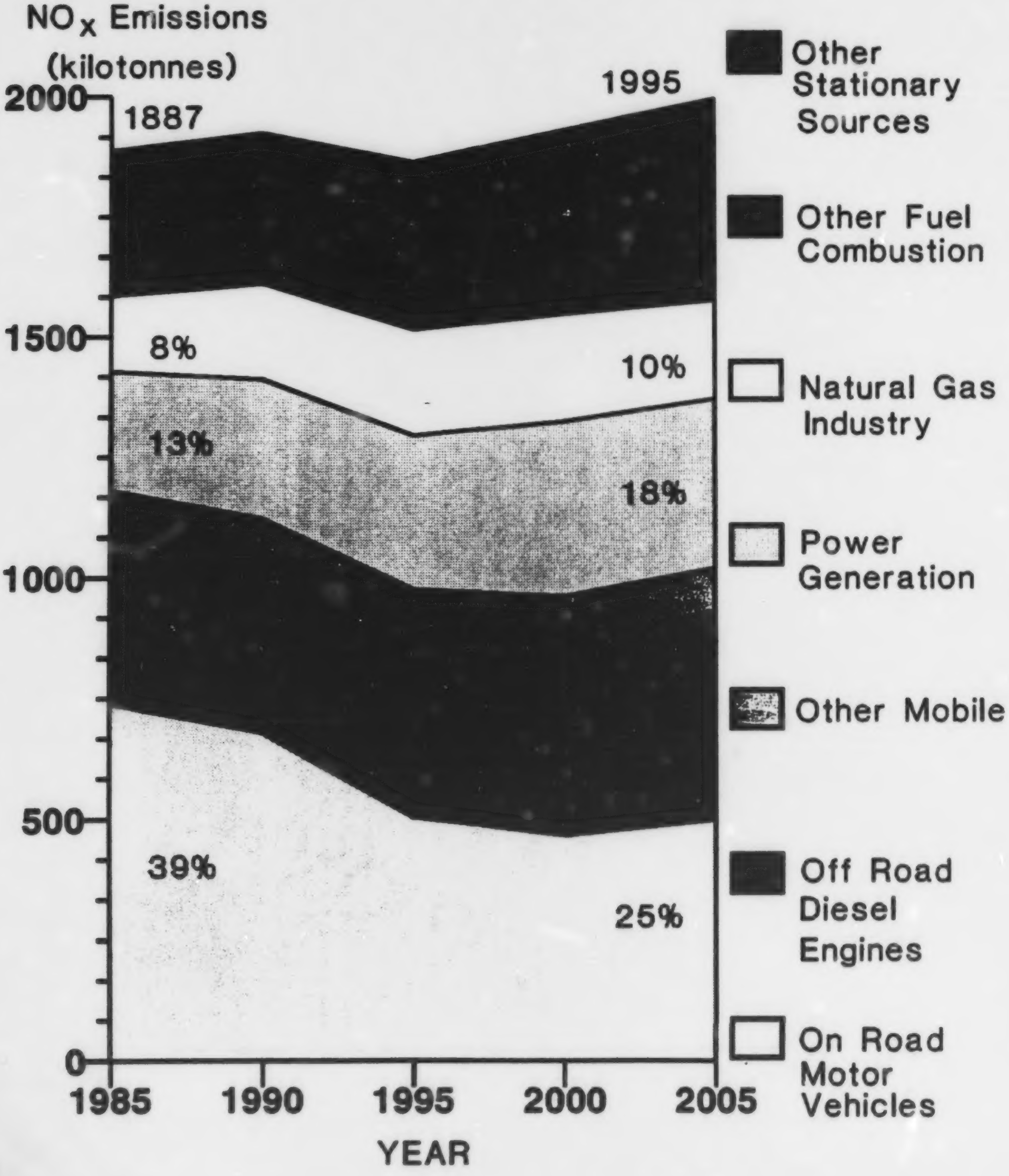


13

VOC EMISSION PROJECTIONS



NO$_x$ EMISSION PROJECTIONS



CCME DECISION - OCTOBER 6, 1988

[redacted]

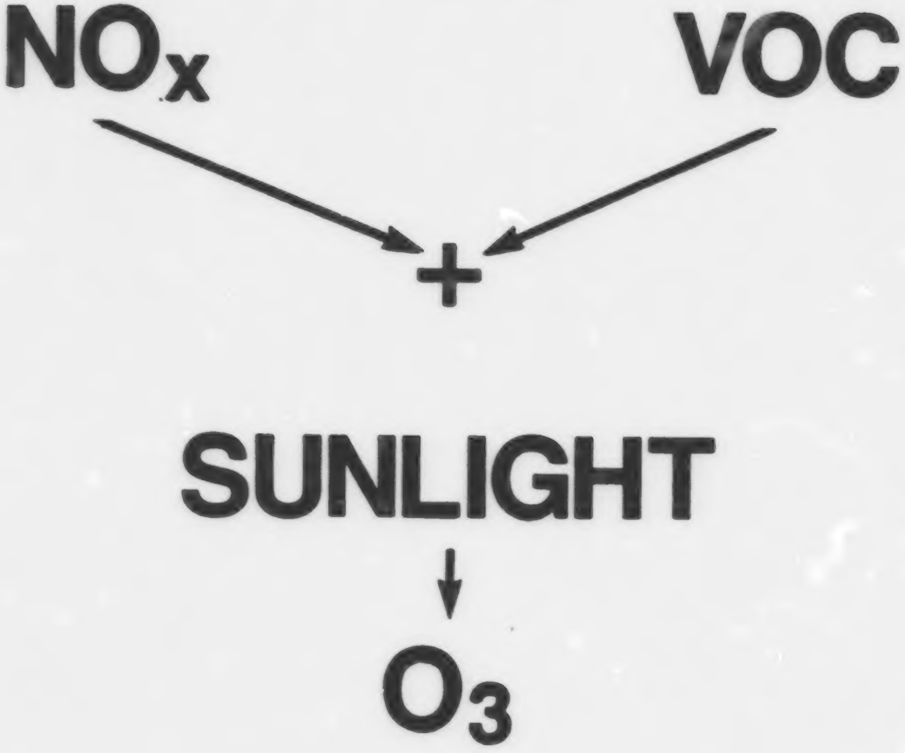
[redacted]

[redacted]

- SOLVE DOMESTIC ENV. PROBLEMS
- MEET INTERNATIONAL OBLIGATIONS
- HAVE ENERGY EFF. & CONS. PLAY A SIGNIFICANT PART
- CONSULT WITH ALL STAKEHOLDERS

[redacted]

OZONE



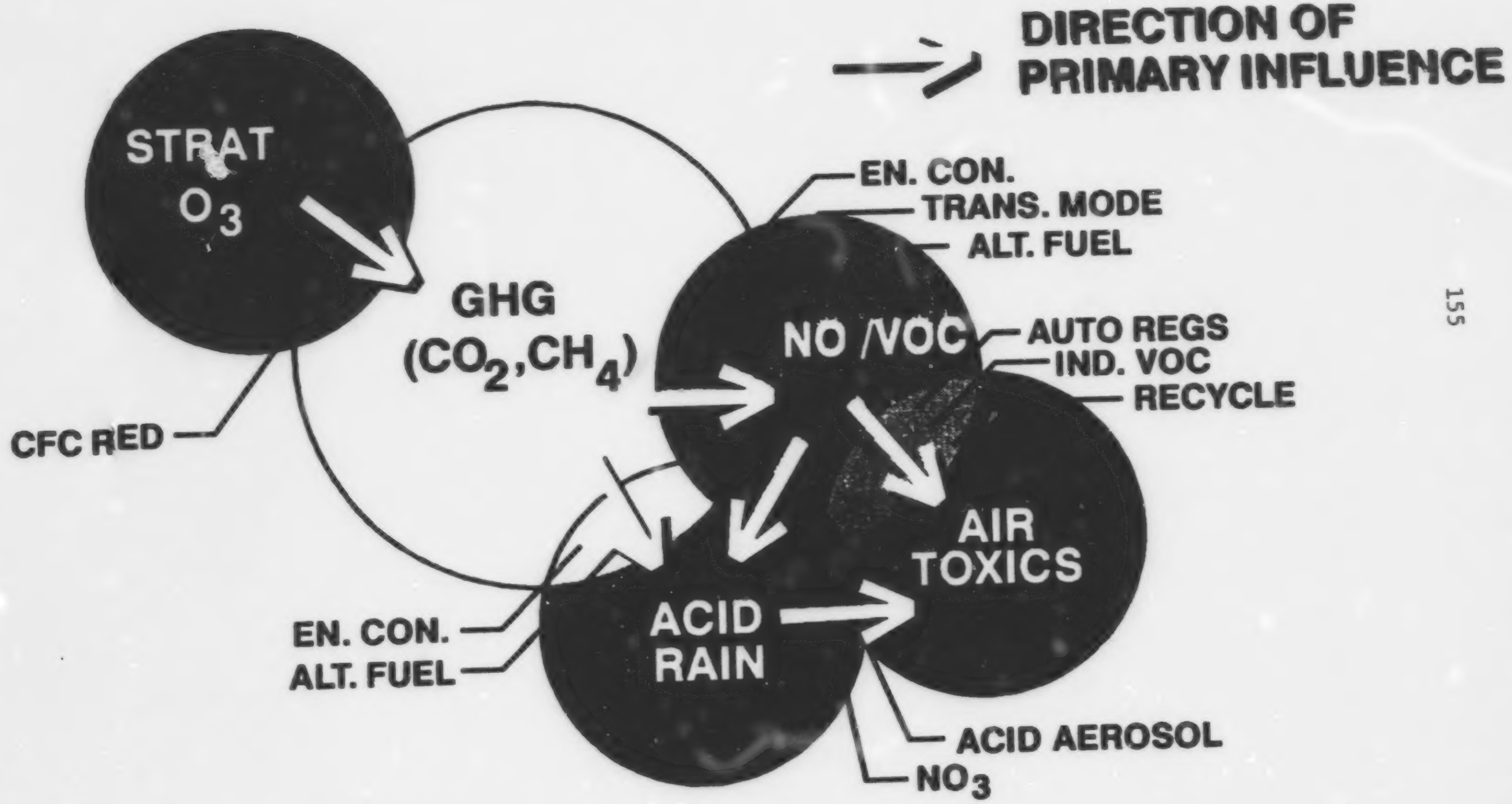
NO_x → + ← VOC

SUNLIGHT

↓

O_3

ATMOSPHERIC ISSUES; LINKAGES IN CONTROL


DIRECTION OF PRIMARY INFLUENCE
STRAT O_3
GHG (CO_2,CH_4)
NO /VOC
AIR TOXICS
ACID RAIN
CFC RED
EN. CON.
TRANS. MODE
ALT. FUEL
AUTO REGS
IND. VOC
RECYCLE
EN. CON.
ALT. FUEL
ACID AEROSOL
NO_3

Sixth Canadian Environmental
Government Affairs Seminar

Notes from a Luncheon Address

by

Dr. David Bates
Professor Emeritus of Medicine, UBC

October 23, 1990

When Tom Dann approached me to give this talk to your conference, he can have had little idea how much the background to environmental decision-making would change in the subsequent six months. This should caution us against having too much confidence in projections.

Before peering into the future, I think it would be helpful to see where we have been. The 1950's were a decade of local and regional problems, such as the London smog episode of 1952. The 1960's were a period of simple amelioration efforts such as prohibiting open coal burning; this decade also saw the first significant health studies on pollutant effects. The 1970's were complacent years, but control technologies continued to develop, and a pollution control industry began to emerge. The 1980's saw three major changes. The first was recognition of long-range transmission of air pollutants; the second was the evidence of global impacts; and the third was the concern about hazardous waste sites. I should note that in 1968 a symposium had been published on global effects of pollution, but these concerns were not focussed until the discovery of the hole in the ozone layer and the documentation of the steadily rising CO_2 level in the earth's atmosphere.

There are three recent events that have been very informative. The first has been the demonstration from Eastern Europe that it is possible to have a very inefficient economy together with gross pollution; before that most of us had thought that the costs of ameliorating pollution inevitably went with economic decline. We do not yet know the full extent of Eastern Europe's pollution problems; but in May of this year, I was given SO_2 data from Weimar in East Germany that showed that during the past three winters, SO_2 levels there exceeded those in London in December 1952.

The second development has been the recent attempt to solicit public input into priority decision-making. And the third, which happened yesterday, was the long-awaited US agreement to limit $S0_2$ emissions.

I was asked to concentrate on what the 1990's were going to hold for us. There seem to be four major points to be made:

1. In the 1990's we should learn which of the global warming scenarios is the most likely. If evidence of continued warming becomes more solid, there will be an international scramble to limit emissions to prevent further rises.

2. There will be a progressive crunch between economic survival and environmental prerogatives. These are two tectonic plates colliding, and we have so far only had very preliminary and mild tremors. One emphasis will be to turn to non-polluting technologies. In a keynote address four months ago, Mr. Michael Deland, Chairman of the US President's Council on Environmental Quality said: *"I submit that the time has come for a fundamental shift in emphasis, namely to shift our focus towards pollution prevention or stopping pollution at the source, rather than spending millions or billions to clean up the mess at the end of the pipe"*.

   This summer I heard a talk at an AWMA meeting in Los Angeles at which Mr. Curtis Moore, formerly counsel for the US Senate committee on Pollution, describe current Japanese technology for coal burning generating stations which, if applied in the US, would cut $C0_2$ emissions by 66%; SO_2 emissions by 92% and NO_x emissions by 87%. We may be entering an era in which regulations shift from emission control to mandating replacement of obsolete, high pollution plants. The European experience suggests to me that this would be timely.

3. Thirdly, I suggest that we are entering a crisis in democratic decision-making. I was in Britain last month, when the government unveiled its White Paper on the Environment. This got a uniformly bad press, at least the five different newspapers I saw all thought little of it. The Minister had a difficult time defending it on television. The Report was strong on words like *"encourage; recommend; consult; and promote"*, but weak on active verbs like *"implement; achieve; or ensure"*.

Mr. Hugo Young in a column in the Guardian weekly on October 7th commented that the public "*has been years ahead of Ministers in addressing the inexorable facts*" and went on to say that "*The extreme caution of the White Paper reflects not a malign conspiracy within Whitehall so much as a crisis of democratic politics. Can the politicians trust the people to pay the price without wreaking electoral revenge?*" And later in the same column he wrote: "*Will any government be strong and confident enough not only to tell the truth, which this White Paper does begin to do, but to act on the message of the truth?*"

One wonders if the coming Canadian "*Green Paper*" will fare any better.

It was Lord Ashby who reviewed British legislation on pollution over the years, and concluded that government had only acted when pushed by an aroused public. California in the South Coast Air Basin will provide the first real test of this question by mandating the eventual phasing out of the gasoline-powered car. Public reaction has yet to be measured. My belief is that Los Angeles and Tokyo together, with a huge market, will pioneer the first NO_x and ozone free cities. The current proposals represent a decisive break with the past; in the 1990's, we will learn just how far public resolve can be translated into inconvenient action.

4. I ask myself why democratic governments in the English speaking world, have been so slow to respond to sustained public concern on the environment - I need not elaborate the evidence as I am sure you are familiar with it. I think that the 1990's will see a reluctant but long overdue change in this attitude in these countries. A first need is to open up decision-making in Canada. Are you aware that there is no structured public input into Canadian discussions on safe clean air standards for Canadians, these being decided by bureaucrats in closed session? In fifteen years of railing against that, I have made no progress. Is there light at the end of that tunnel, and will I survive to see it?

The removal of lead from gasoline represents a clear environmental accomplishment of the past decade; the lowering of blood lead levels in US children has run parallel with the reduction of sales of lead containing gasoline. The data indicate that the contribution of automobile lead to the blood level in children was much greater than we had imagined or the industry had told us was the case. The case of lead, which required regulation for health protection, reminds me to say that human health concerns in relation to air pollution are often ignored. An exception has been the leadership role of the previous Minister of the Environment in Ontario, Mr. Jim Bradley, who was stressing the adverse health impact of the precursors of acid rain at a time when the official Canadian position was that these did not occur. In the parliamentary system, we have special difficulties since health concerns are the responsibility of a different ministry - one with its own priorities. I hope that the 1990's will see some improvement in the liaison between Health & Welfare Canada and Environment Canada - it is badly needed.

I am not only an optimist but also a pragmatist. I realise that there are legitimate global concerns, but some of them are out of my reach. I cannot influence the cutting down of the tropical forests; and I have listened in vain for sensible advice as to how the poor people in that region of Brazil can improve their lot without destroying something that is valuable to all of us. In these remarks, I have therefore concentrated on things within our own compass.

Finally, what I am sure is the truth, is that international political crises, like the current dilemma in the Gulf, and our local anxieties like the necessary restructuring of our federal system, will periodically divert attention from long-term environmental issues. I am also sure that it is the reality that these problems will not go away or solve themselves. Perhaps in the 1990's we will accord them the continued attention they require; we may be about to learn how radical our restructuring is going to have to be.

REMARKS BY

D.B. MACCARTHY
VICE PRESIDENT, ENERGY MANAGEMENT
ONTARIO HYDRO

TO THE

AIR AND WASTE MANAGEMENT ASSOCIATION

OTTAWA, ONTARIO
OCTOBER 23, 1990

Remarks by

D.B. MacCarthy
Vice President, Energy Management
Ontario Hydro

AIR AND WASTE MANAGEMENT ASSOCIATION
Ottawa, Ontario
October 23, 1990

The environment is the Number One issue on the public agenda. It cuts across socio-economic lines, cultural groups, political affiliations, and so on. It is THE issue that moves people. And, as such it presents a real challenge to those of us in the utility business.

Today I would like to make some general remarks about Hydro's impact on the environment and what we are doing to minimize it. But I would also like to state upfront that, unlike my colleagues here today, I'm not an environmental specialist. So I can't provide you in any detail with all the technical ins and outs of Hydro's environmental protection efforts. At Hydro, I'm responsible for the Corporation's conservation and energy efficiency programs. Yet, I think they are among our most promising options in pursuit of a cleaner environment. So after talking a little bit about the environmental effects of generating electricity, I intend to spend the rest of my time telling you what we're doing to avoid generating any more electricity than we need.

Let me give you a crash course in how utility operations affect the environment. In short, virtually all forms of electricity generation have a significant impact on the environment. Hydraulic stations can interfere with fish and wildlife habitats, cause soil erosion, and affect water quality. Nuclear stations have the potential to release harmful radioactive emissions to air and water; as well, the problem of long-term disposal of nuclear waste has not yet been resolved. And coal-fired generation is the major source of acid gas emissions causing acid rain.

Beyond the generating of electricity, transmission and distribution also have environmental impacts. The need for an extensive and efficient network of transmission lines often means that prime agricultural land, migratory routes for birds and animals, or ecologically sensitive areas must be affected. Transformer stations still house harmful PCB's. Herbicides must still be used along distribution lines to prevent tree growth from interfering with the lines.

In short, the production and delivery of electricity does have a significant impact on the environment. So our first environmental challenge as a corporation is to minimize that impact. To those of you here today from the pulp and paper industry, mining and smelting, chemical processing and similar sectors, this is all familiar territory. You, too, have had to make significant and costly adjustments to your operations in order to meet more stringent environmental regulations or respond to public concerns.

In the past few years, Ontario Hydro has taken some important steps towards improving our environmental protection. For example, we have reduced herbicide use by 39 per cent. Almost one million litres of PCB-contaminated oil in transformer facilities was replaced and an additional one million litres was decontaminated through our mobile decontamination unit. Almost 25,000 trees have been planted under a tree replacement program initiated last year. About 25 per cent of the coal ash produced in our fossil-fired stations was recycled for by-product use. We are continuing our efforts to reduce acid gas emissions at our coal stations despite the fact that increasing demand for electricity has resulted in having to rely on coal generation substantially more in the past year than expected.

All told, our 1989 expenditure on environmental protection measures was in the neighbourhood of $300 million. So it's clear that we mean business when it comes to helping clean up the environment.

Recognizing that we have a responsibility to protect the environment, our mandate is to meet the electricity needs of the province in the most prudent, economical, and socially acceptable manner. In the past, meeting growing demand meant building new plants. Today it's not that simple. The economics, environmental impact and public view of any new generating capacity makes building plants a much more difficult prospect. Yet, on the other hand, we're facing a supply squeeze in the next few years if we don't get moving on some new sources of electricity.

That is the essential driver behind our Demand/Supply Plan released last December. It lays out a number of options which the province could choose to meet the expected demand for electricity into the next century. It includes major refurbishments of existing plants; the development of the remaining small hydraulic potential which is mainly in the northern part of the province; purchases of surplus power from neighbouring utilities (such as Manitoba Hydro or Hydro Quebec) as well as from small private generators and co-generators within Ontario; the building of new coal-fired, gas-fired, or nuclear units; and, finally, conservation.

In submitting this plan to the government, we highlighted three scenarios or combinations of options which would meet future electricity demand. We singled out one of them as being the best, in our view, for meeting the economic, environmental, social acceptance criteria, etc. The government will now conduct public hearings into the plan under the Environmental Assessment Board sometime in the new year.

Outside of conservation, most of the elements require some kind of regulatory approval. Given the timing and length of the public hearing process, we may not have approval to go ahead with any plan until 1993, putting us into an even tighter supply squeeze.

You may be asking, "What does all this have to do with linking energy efficiency and the environment?" What I've attempted to do here is initially to describe our operating environment

and indicate that encouraging energy efficiency - that is,
conservation or demand management, as we call it in utility terms - is a strategic necessity for Ontario Hydro right now as well as an environmental protection measure.

Faced with increasing demands for electricity, public disenchantment with the environmental impacts of building conventional coal-fired and nuclear plants, and a slow and arduous regulatory route ahead of us, we have few options to meet electricity needs in the short term. Fortunately, however, demand management is one promising "source" of power which we are able to tap right away.

So, from a strategic point of view, demand management must be pursued because it will help meet the province's power needs in the short term before any new supply options are approved and initiated; it has the potential to yield a substantial amount of power at a cost that is less than or comparable to building new generating facilities; pursuing demand management is the only way we can demonstrate to the public and to our political masters that new supply is ultimately needed; and, most importantly in the context of today's session, demand management has virtually no negative impacts on the environment and has the overwhelming positive impact of reducing the need for new generation.

While I'm hesitant to give you a direct equation between electricity saved and pollutants eliminated (because it can very so much depending on time of consumption, etc.), let me give you one illustration. The average house uses 700 kilowatt-hours annually just for lighting with standard bulbs. What is the corresponding amount of acid gas and $C0_2$ emitted to produce those 700 kWh? Approximately 630 kilograms of CO_2 and 12 kilograms of acid gas emissions. An energy efficient bulb such as this one (HOLD UP OSRAM BULB) uses only 15 watts but gives the lighting intensity of a 60-watt bulb. This means that most 60-watt bulbs could be replaced by this energy-efficient bulb and three-quarters of the electricity normally consumed would be saved. Translate that into emission savings and you can make a significant dent in that output level.

Our conservation goal is to "produce" 4,500,000 kilowatts of electricity by the year 2000 through demand management programs. That means developing and marketing programs that will save the amount of power currently used by the whole community of Metro Toronto. In supply terms that's roughly equivalent to the electricity produced by all eight reactors at our Pickering generating station.

Our portfolio of demand management programs is designed to appeal to a broad range of customers across the residential, commercial, and industrial sectors. I will be going into some of these programs more specifically in a few minutes. But first I'd like to categorize the three major thrusts in our demand management strategy.

The first vehicle we use is information. Most customers don't realize what they could be doing to save energy and money. So providing information on low-cost or no-cost conservation options is the first step. We produce almost 200 materials - from single-fold pamphlets to three-inch manuals - aimed at informing customers about their conservation options.

Another step is providing energy audits. This particular program got started with our commercial and industrial customers and we're now expanding it to residential consumers. The concept of these audits is to identify energy-saving opportunities around the customer's home or business. In the case of the homeowner, a "checklist" on energy use is mailed to the customer. He or she then goes around the house, filling out the checklist. It is then mailed back to Hydro to be analyzed and, after that,
information on the best options for that particular customer is sent back to him.

For commercial and industrial customers, whose energy use patterns can be quite complicated, we actually send out an auditor who collects all the consumption data, feeds it back to be analyzed, and a Hydro energy services advisor then comes back to the customer with recommendations. In the case of many large industrial customers, we will even pay an independent energy consultant to do a more detailed audit, if warranted.

Perhaps the most important tool we use in promoting conservation and energy efficiency is financial incentives. Most of our programs feature some kind of financial incentive for the customer to switch to more energy efficient equipment, appliances or processes. As there tends to be a premium cost to converting to energy efficient lighting or motors, for example, we subsidize the customer's investment. In the case of most high-return applications in commercial or industrial operations, that incentive can be up to 50 per cent of the cost of conversion. For residential customers, our recent promotions have generally taken the form of a 25 per cent rebate, such as our "April Showers" showerhead promotion last spring or our current joint promotion with Loblaws or energy efficient lightbulbs. Beyond the initial incentive, customers also benefit by lower long-term energy costs.

I want to stress that these incentives add up. Our demand management budget for the next 10 years is about $3 billion. And over half of that is likely to be incentive payments to customers.

The idea behind providing financial incentives to customers is in keeping with our overall strategic thrust of making demand management attractive. In a way, it also proceeds from the belief that you get farther by offering a carrot than a stick. At this point, we feel it's more effective to get our customers onside, to show them the benefits of our conservation programs, and to move them to adopt demand management not because they have to but because they want to. And our research shows that cost savings are a strong motivation.

Clearly, another of the benefits of conservation is its environmental impact. Any kilowatt we have to generate or purchase has an environmental cost attached; any kilowatt we can save, doesn't. By helping to save electricity through adopting Hydro's conservation programs, customers can feel that they are contributing to a cleaner environment. Obviously the public wants to do something to help the environment. The success of the "Blue Box" campaign throughout Ontario is a clear indication of that. So if our energy conservation programs can marry environmental soundness with cost savings, we are sure to get customer pick-up.

In the commercial sector, we offer a wide variety of programs for the various market segments. In the office building segment, for example we are advocating energy management control systems, internal source and ground source heat pumps, thermal cool storage, and high efficiency fluorescent lighting.

In retail stores, malls and plazas, we're supporting heat pumps including bivalent roof top units for strip malls, as well as high efficiency merchandise lighting. In the hospitality sector, we're aiming for improved efficiency through heat recovery, energy efficient showerheads, installation or room occupancy sensors for set back thermostats, and the use of heat pumps.

We're starting to get some excellent results from our commercial program efforts. For instance, our lighting incentives have resulted in about 54 megawatts of savings so far; we have four major customers lined up for thermal cool storage systems; and we've installed over 17,000 energy efficient showerheads in hotels and multi-residential buildings.

Our "Power Savers" audits, which I mentioned earlier, have been completed on over 1300 customers covering 140,000,000 square feet of space and identifying approximately 60-70 megawatts of conservation potential.

Turning to the industrial sector, our programs have four principle objectives. To raise awareness of and commitment to electrical efficiency in industry; to identify opportunities to introduce load shifting; to provide support for industry initiatives designed to improve energy efficiency; and help customers adopt energy efficient electrotechnologies.

Our program activities include billing reviews and walk through energy analysis and audits, energy monitoring, motor sizing surveys, and incentive programs for energy efficient motors, variable speed drives, and load shifting.

Load shifting, as I mentioned earlier, is an area we're particularly active in with our industrial customers. In January of last year, we introduced time-of-use rates in the province. And about 70 per cent of Ontario Hydro's total load and 80 per cent of the municipal utilities' load for large industrial users is now billed under time-of-use rates. over 60 megawatts of savings were realized during the first year these rates where in effect.

In the residential sector - we're heavily involved with programs in both the existing and new housing markets. We're focusing on information about new home construction, energy efficient appliances, the R2000 energy efficient home design, blankets for water heaters, energy efficient showerheads, heat pumps, and a range of other lower-tech, easy things for the customer.

One promotion we have currently going on is a discount coupon campaign with Canadian Tire. We are offering customers rebates on such things as energy efficient lighting products, showerheads, and caulking and weatherstripping materials for the home. This was based on a similar very successful campaign we undertook last year with Home Hardware. According to sales figures, purchases of these items increased more than 200 per cent over the previous year because of this promotion. And we expect similar or better results from this 1990 promotion.

"April Showers", the showerhead rebate program we featured this spring, resulted in sales of 130,000 energy efficient showerheads, approximately 90,000 more than would normally have sold at that time. Our most recent promotion, which we have launched jointly with Loblaws and Osram, features a 25 per cent discount on energy efficient lightbulbs purchased at Loblaws. These bulbs are part of the "President's Choice" G.R.E.E.N. line of environmentally-friendly products.

This will be perhaps the most interesting campaign to watch as it is the first to make a blatant environmental link with energy efficiency. And, clearly, customers are responding. The original stock of 20,000 bulbs ws expected to last throughout the three-month promotion. Instead they sold out in less than two weeks. Another 20,000 is on order right now and they should be back on the shelves by next week.

To be honest, there was some concern within Hydro about getting into bed with a company such as Loblaws which has taken a very strong and visible position on the environment. Not that any company these days could survive if it demonstrated any callousness or indifference to the environment. In fact, most companies, organizations, and governmental agencies are trying to "out-green" each other.

But I think there is a danger here which all organizations, particularly the strong marketers, should be aware of. And I'd like to conclude by remarks with some comments about "using" the environment to sell energy efficiency, or anything, for that matter.

Using the environment as a "selling point" is fine but that link to the environment must be appropriate, credible, and easily understood by your customers. First, it must be appropriate. if a product has a significant beneficial impact on the environment, then it is appropriate to emphasize strongly that benefit to customers. But if the environmental benefit is relatively minor, overplaying that benefit can backfire. Customers today are too well-informed to buy everything that's said in advertising. I'm sure we've all seen ads for products that have all of a sudden jumped on the environmental bandwagon ("Sunlight", for example) and yet it was the same product that was on the shelf last year before the environment became a selling point.

Second, it must be credible. You can't brag about the environmental benefits of one of your products if, in order to make it, you're filling a river with toxic wastes. We face that risk at Hydro. In a way, it can look like we're talking out of both sides of our mouth if, on one hand we're pushing energy efficiency on environmental grounds and, on the other, pumping acid gas emissions into the air. So a company must consider all aspects of a particular product. If it can say, "we're doing X,Y, and Z to improve the environmental impact of our facilities or manufacturing processes", then the environmental link in its product marketing will be credible.

Finally, that link must be easily understood by customers. Do you remember the first time detergents started claiming that they contained "no harmful phosphates"? Most people probably didn't know what phosphates were and their effects on lakes and rivers when theses ads first appeared. But several detergent manufacturers made it as clear as possible that phosphates harmed the ecological balance of lakes and rivers. Thee are some consumers who will want to have a lot more specific scientific data about a product's environmental impact. But most consumers will simply want to know that the product they buy is produced in an environmentally sound manner and has a particular environmental benefit over a comparable product.

In Ontario Hydro's case, for example, we could go into reams of detail about the precise amount of peak load saved on average by each bulb or showerhead or heat pump time and what that translates to in terms of acid gas emissions; or how we're working on encouraging the development of recycling programs for hydrogenerated chlorofluorocarbons (HCFC's) to reduce emission of these chemicals from heat pumps; or how proper disposal of used ballasts during conversion to energy efficient lighting can reduce PCB leakage. But I'm sure you get my point. In all environmental claims, the "KISS principle" - keep it simple, stupid! - is important. A company must be honest and complete in its environmental claims, but the message should be as clear and concise as possible to be effective in the marketplace.

In closing, I'd like to make one final point. Concern for the environment isn't a fad. So neither are environmental solutions. Energy efficiency and conservation will always be part of Hydro's strategy for meeting future electricity needs in an environmentally sound way.

REGULATION OF PRIORITY SUBSTANCES UNDER THE CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): EXPERIENCE TO DATE

John Buccini
Director
Commercial Chemicals Branch
Conservation and Protection
Environment Canada
Hull, Quebec

INTRODUCTION

This paper presents an outline of the Priority Substances program that is being implemented by the federal government under the Canadian Environmental Protection Act (CEPA) to assess and control the health and environmental risks of toxic substances. Included is a brief review of the national and international aspects/of the problems associated with increased industrialization and the use and release of chemicals to the environment, the Canadian strategy to deal with these issues, a brief review of the legislative requirements of CEPA and the progress to date in implementing the CEPA program.

BACKGROUND

All too frequently these days, we hear a news story relating to leaking toxic dump sites, industrial accidents, the contamination of drinking water or food supplies, or other problems resulting from increasing industrialization and the global use of chemicals on an ever-increasing scale. These events underscore the fact that we have yet to master the industries and the use of the chemicals that we have, wittingly or otherwise, come to depend upon for our current standard of living.

Many nations are grappling with the complex short- and long-term problems posed by industrialization and the use of chemicals in modern society. There has developed a crisis of confidence in the abilities of governments and industries to manage economic growth effectively in a way that protects our citizens and that will pass on a viable environment to future generations. As a result, environmental issues have come to occupy a unique position on the political agenda in industrialized countries. This is particularly the case in Canada where concern for the environment is directly linked to Canadians' perceptions of themselves and their country. For the first time in our history, concern for the quality of the environment has been either first or second (to jobs or the economy) in public opinion polls for the last few years. The federal government has been asked to respond to the concerns of the public and to do so in a manner that is more effective than past efforts have been.

The factors involved in this issue include the following.

1. There are an estimated 100,000 chemical substances in international trade and commerce, and these chemicals are used in combination in countless

products and formulations. The public has called on governments to ensure that public health and the environment are not at risk from the use of these chemicals.

2. There are hundreds of effluent streams, emissions and wastes from industrial and other operations and these complex mixtures need to be evaluated for their potential health and environmental risks. Attempts to evaluate the risks posed by all the individual constituents of such complex mixtures will not be practical and we need to assess the net impacts of these mixtures.

3. Canada is a large country, with varying ecosystems and an uneven distribution of population and industries. Some of our national problems will reflect these situations and attempts to assess the environmental impacts of substances will have to take into account the different ecosystems that we have in Canada (Great Lakes, marine environment, the Prairies, the North, etc.).

4. We now recognize that many substances will undergo regional and global distribution once released to the environment. Our appreciation of this fact has been heightened over the past five to ten years with the recognition of such problems as the depletion of the ozone layer by chlorofluorocarbons.

5. Canadians are not alone in pressing their governments for action: other countries have their own environmental problems and, particularly in recent years, their governments have come under pressure to take action to protect the environment and public health.

6. In developing a Canadian strategy for responding to these problems, we must recognize that Canada accounts for, at most, a few per cent of global trade in chemicals. For there to be significant advances on problems of a global nature, we must coordinate our responses with those of other countries.

7. It is not possible to deal at once with all the problems that present themselves. We are always going to be affected by resource limitations, social pressures and scientific and international developments. We must select our priorities wisely and commit ourselves to conducting proper risk assessments of potentially toxic substances.

STRATEGY

Considering both the domestic and global situations, the federal government has adopted a strategy that has two components, each dependent upon the other to solve the problems of existing substances in this country.

The first component involves strengthening Canada's domestic program for assessing and controlling toxic substances. The legal basis for taking necessary actions is contained in CEPA, which came into effect on June 30, 1988. The details of these provisions are discussed in the next section of this paper.

In addition to strengthening domestic programs, the Government of Canada acknowledges that international cooperative action is essential in order to succeed in assessing and controlling the environmental impacts of toxic substances. Canada has supported and will continue to press for international cooperative programs to ensure that appropriate and timely controls are developed for those toxic substances that are capable of contaminating the environment on a regional or global scale. Canada has been very active in the recent United Nations Environment Program (UNEP) activities to control the use of ozone-depleting substances, in the International Programme on Chemical Safety of the World Health Organisation, and in the Chemicals Programme of the Organization for Economic Cooperation and Development (OECD). We believe that all countries that participate in such multinational programs can make best use of the human resources available if we pool our efforts in testing, assessing and monitoring priority existing substances. When there is collective agreement to control a toxic substance, then it is possible to minimize economic disruptions and avoid pollution havens while moving to reduce releases of the chemical to the environment.

Thus the Canadian strategy involves a strengthening of our domestic programs coupled with a commitment to increasing international cooperative programs.

CEPA PROVISIONS

The Canadian Environmental Protection Act (CEPA) has, as its focus, a life-cycle management approach to toxic substances and will be administered to emphasize the complementary strategies of anticipation and prevention. It is now accepted as fundamental that after-the-fact remedies can no longer be an acceptable mode of doing business as the costs, in all senses, are too large. CEPA embodies an ecosystem vision of environmental protection encompassing air, land, water, all layers of the atmosphere and all organic and inorganic matter and living organisms. The Act recognizes environmental protection for its own sake while issuing a strong policy statement linking the life and health of Canadians with protection of the environment from the effects of toxic substances. Above all the Act improves the Federal Government's ability to control the release of toxic substances into the environment.

The CEPA regulatory process for existing chemicals involves five sequential stages:

1. priority selection;
2. risk assessment;
3. control options analysis;
4. regulation making and enforcement; and
5. assessment of the adequacy of regulations.

The Priority Substances List (PSL) is associated with the first stage (priority selection) and substances on the PSL will be given priority for assessment to determine whether or not they are "toxic" as defined by section 11 of CEPA, which states, in part:

> "... a substance is toxic if it is entering or may enter the environment in a quantity or concentration or under conditions
>
> (a) having or that may have an immediate or long-term harmful effect on the environment;
> (b) constituting or that may constitute a danger to the environment on which human life depends; or
> (c) constituting or that may constitute a danger in Canada to human life or health."

CEPA requires public accountability for the selection and risk assessment of priority substances. Specifically, the Ministers of the Environment and of National Health and Welfare must:

- prepare and publish a PSL;
- respond, within 90 days, to public nominations for addition to the PSL;
- prepare assessment reports, within 5 years of the date that a substance is placed on the PSL, and make them available to the public;
- publish a summary of the results of the assessment and any regulatory intentions in the Canada Gazette; and
- respond to notices of objection to decisions that a substance is not toxic.

In preparing the CEPA Priority Substances List for the first time, the Ministers of the Environment and of National Health and Welfare gave consideration to the advice provided in the reports submitted by the Canadian Environmental Advisory Council ("Listing Toxics Under CEPA - Is the Chemistry Right?") and by an Advisory Panel chaired by Professor Ross Hume Hall ("Report of the Ministers' Priority Substances Advisory Panel"). The recommendations in these reports reflected consultations with academia, industry, environmental public interest groups and provincial governments, as provided for in subsection 12(3) of CEPA. A substance was selected for the List if it met at least one of the following three criteria.

(a) The substance causes or has the potential to cause adverse effects on human health or the environment.

(b) The substance accumulates or could accumulate to significant concentrations in air, water, soil, sediment or tissue.

(c) The substance is released or may be released into the environment in significant quantities or concentrations.

Substances that have sole uses as registered pest control products, drugs or food additives are not included on the List as these substances are subject to other federal legislation.

The first Priority Substances List was published in the Canada Gazette, Part I on 11 February 1989 (p.543), and includes 44 substances (Table 1). A priority substance can be a single chemical compound (e.g. benzene), a class of chemicals (e.g. dioxins) or a complex mixture of substances in effluents or emissions (e.g. pulp mill effluents). Assessment reports will be prepared and published on all 44 by February 11, 1994. In carrying out the risk assessment of a priority substance, the following data elements will be reviewed.

1. Identity and Physical and Chemical Properties:

   Knowledge of these factors is necessary to understand the behaviour of any substance with respect to its exposure pattern as well as its toxicological characteristics. Since the use of a chemical is largely dependent upon its physical and chemical properties, these data are usually readily available or easily retrieved for commercial chemicals.

2. Exposure Data:

Included are those data relevant for assessing exposure via the workplace, consumer products or the environment. In addition, information about the substance's transport, distribution, and transformation in the environment is of great interest in determining exposure patterns. Exposure information could be derived from data on actual production, use pattern and disposal. Use patterns indicate the approximate amount of a commercial chemical in use and the likely pathway into the environment. Other characteristics of the exposure pattern include the frequency, intensity and duration of releases and populations exposed.

Often it is not possible to make a quantitative assessment of human or environmental exposure due to lack of data. Moreover, many chemicals are handled in a great variety of ways including unknown end-uses. However, a qualitative judgment of type and relative degree of exposure can often be inferred indirectly from certain basic physical and chemical data and from a description of the function and intended use of a chemical.

3. Effects on Experimental Animals and In-Vitro Test Systems:

The data relevant to the metabolism in and effects on animals and in-vitro systems are used to model effects on humans and environmental organisms. Information of particular interest for assessing health effects includes toxicity, the species affected, the route(s) of exposure for which the most important toxic effects occur, the frequency and duration of exposure, dose-response relationships, etc. Internationally, there is broad agreement on many current test procedures and, to a certain extent, on interpreting test data.

4. Effects on Humans:

Data from case observations, clinical trials, and epidemiological studies, together with interpretation of data concerning effects on experimental animals and in-vitro test systems, form the basis for human health effects determinations.

5. Effects on the Environment:

Included are those data relevant to understanding the impact on some populations within the ecosystem and the bioaccumulation potential. Environmental effects may be divided into two general categories:

(i) bioaccumulation potential as an indicator of a chemical's ability to concentrate in living organisms; and

(ii) toxic effects, as a measure of the potential impact of a chemical on the structure and function of some populations within the ecosystem.

Predicting effects on the ecosystem from laboratory tests presents significantly different problems compared with those encountered in predicting health effects. For health effects, individual toxic end-points are relatively well-defined and understood. There is far less consensus on the significance of ecotoxicological test results. For this reason, estimates of ecological effects involve greater uncertainties, which must be taken into account in the review process.

Somewhat simplified, risk refers to the probability of harm occurring as a result of a given level of exposure to a known hazard. Even when data are available for all the evaluation criteria that are described above, we are still left with some scientific uncertainty. Decisions on scheduling a toxic substance under CEPA will be based on the best scientific information available. While science will address concerns about the safety of chemicals it will never dispel them. In a world of incomplete information, decisions by regulatory agencies will inevitably involve judgments about the acceptability of risks. These value judgments must take into account social and political considerations as well as scientific information. The value judgments must be made only after all parties have had an opportunity to input to the regulatory decision-making process.

If the review of a priority substance leads to the conclusion that the substance is "toxic" (as defined in section 11 of CEPA) then the substance can be added to the List of Toxic Substances (Schedule I) and regulations may be created to control any aspect of the life-cycle of the substance. This coupled with a strong enforcement program should serve to reduce the risks associated with the substance.

It is worth noting that a substance does not have to be designated as a priority substance before it may be regulated. Recently, three halons were designated as toxic substances, as they contribute to depletion of the ozone layer, and regulations have been made to limit their consumption. Fuels that have been contaminated with hazardous waste materials have also been regulated.

PROGRESS TO DATE

Since the publication of the first version of the Priority Substances List, assessments of the substances polychlorinated dibenzodioxins and dibenzofurans have been completed. The summary of the findings was published in the Canada Gazette Part I on March 17, 1990, and the assessment report was released at the same time. The Ministers determined that these two classes of substances are "toxic" as defined in section 11 of CEPA, and recommended that regulations be made under CEPA to control releases of these substances from pulp mills using bleaching and from municipal waste incinerators.

With regard to the other 42 Priority Substances, 25 task groups are in the process of carrying out the assessments and a copy of the most recent schedule for the completion of the assessment reports is shown in Tables 2 and 3. In several cases, one task group will assess more than one substance; for example, one task group will review 3 phthalate esters.

The next substance that is scheduled for completion is "effluents from pulp mills using bleaching". Current expectations are that the assessment report will be available to the public early in 1991. Following this will be a series of reports on the chlorobenzenes and a report on benzene.

As a result of a UNEP international agreement reached in London in June of

1990, 1,1,1-trichloroethane has been identified as a substance that contributes to depletion of the ozone layer. It is anticipated that regulation of this priority substance under CEPA will take place in the near future.

FUTURE ACTIVITIES

While it will likely take the full five year period to complete the assessment of the 44 substances on the first version of the Priority Substances List, we will not wait until this has been completed before issuing an updated version of the list. Some nominations have been received from the public and Environment Canada and Health and Welfare Canada are also preparing nominations for the second version of the list. Two activities that should lead to the identification of new priority substances involve analysis of the data collected on the commercial chemicals included on the Domestic Substances List of CEPA and an international cooperative program to collect data on 1500 high production volume chemicals that account for about 90% of the current commercial production in the 24 OECD countries.

In about 18 months or so, I expect that a multistakeholder consultation process will be implemented to make recommendations to the Ministers concerning substances that should be included on the next version of the list. This program of identifying priority substances for assessment of their health and environmental risks will continue as an ongoing program and should provide the major driving force for the regulation of toxic substances for many years to come.

TABLE 1: CEPA PRIORITY SUBSTANCES LIST

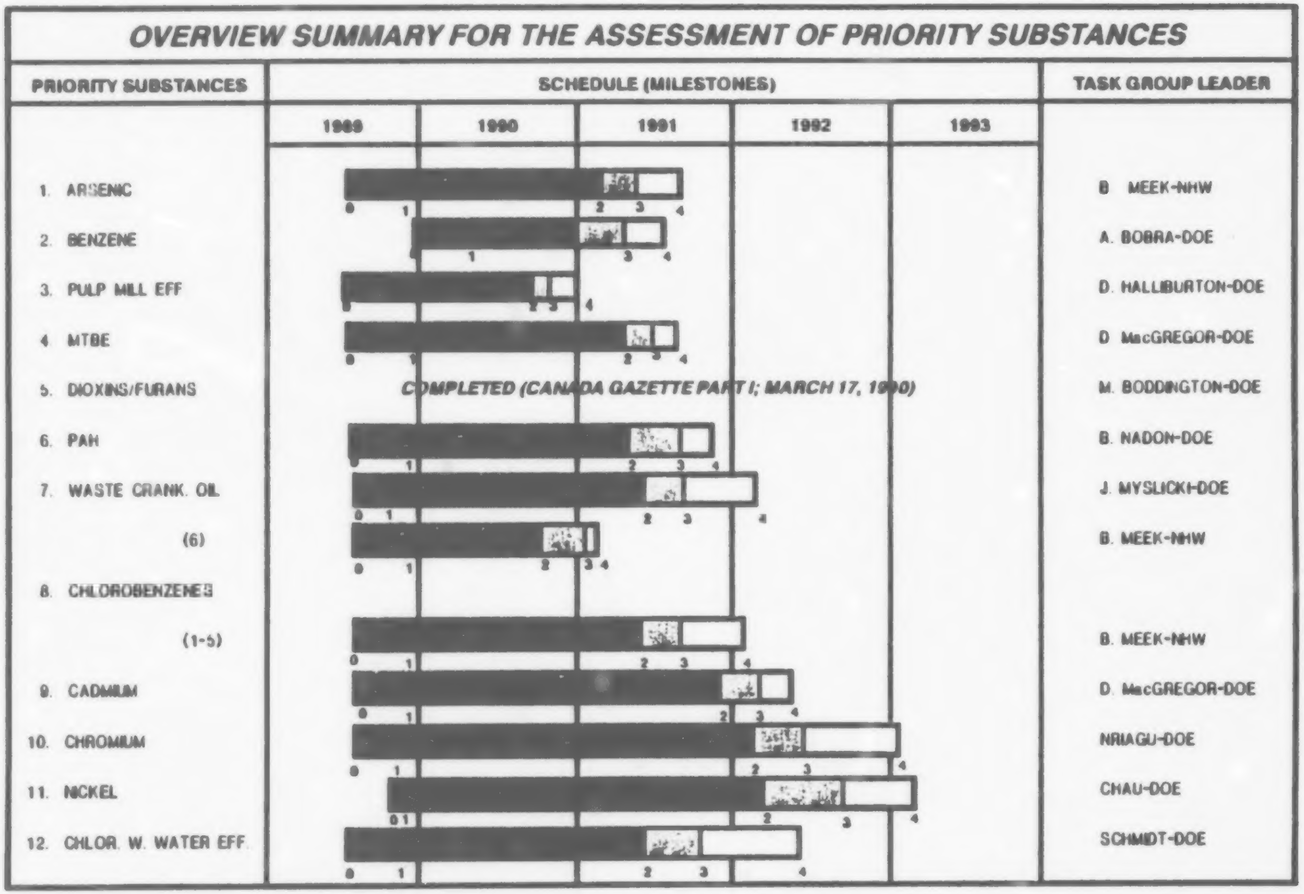
Substances are listed in three groups and, within each group, in alphabetical order. Where possible, the name of the substance is accompanied by the Chemical Abstracts Service Registry Number that uniquely identifies the substance. Assessment reports for the substances in groups 1,2 and 3 are planned for completion by 1992, 1993 and 1994, respectively.

Group 1:
Arsenic [7440-38-2] and its compounds
Benzene [71-434-2]
Effluents from pulp mills using bleaching
Hexachlorobenzene [118-74-1]
Methyl tertiary-butyl ether [1634-04-4]
Polychlorinated dibenzodioxins
Polychlorinated dibenzofurans
Polycyclic aromatic hydrocarbons
Waste crankcase oils

Group 2:
Cadmium [7440-43-9] and its compounds
Chlorinated wastewater effluents
Chlorobenzene [108-90-7]
Chromium [7440-47-3] and its compounds
Creosote-impregnated waste materials
Dibutyl phthalate [84-74-2]
1,2-Dichlorobenzene [95-50-1]
1,4-Dichlorobenzene [106-46-7]
1,2-Dichloroethane [107-06-2]
Dichloromethane [75-09-2]
Di-n-octyl phthalate [117-84-0]
bis(2-Ethylhexyl) phthalate [117-81-7]
Inorganic fluorides
Nickel [7440-02-0] and its compounds
Pentachlorobenzene [608-93-5]
Styrene [100-42-5]
Tetrachlorobenzenes
1,1,2,2-Tetrachloroethane [79-34-5]
Tetrachloroethylene [127-18-4]
Toluene [108-88-3]
Trichlorobenzenes
1,1,1-Trichloroethane [71-55-6]
Trichloroethylene [79-01-6]
Xylenes [1330-20-7]

Group 3:
Aniline [62-53-3]
Benzidine [92-87-5]
Chlorinated paraffin waxes [63449-39-8]
bis(2-Chloroethyl) ether [111-44-4]
bis(Chloromethyl) ether [542-88-1]
Chloromethyl methyl ether [107-30-2]
3,3′-Dichlorobenzidine [91-94-1]
3,5-Dimethylaniline [108-69-0]
Methyl methacrylate [80-62-6]
Mineral fibres
Organotin compounds (non-pesticidal uses)

TABLE 2

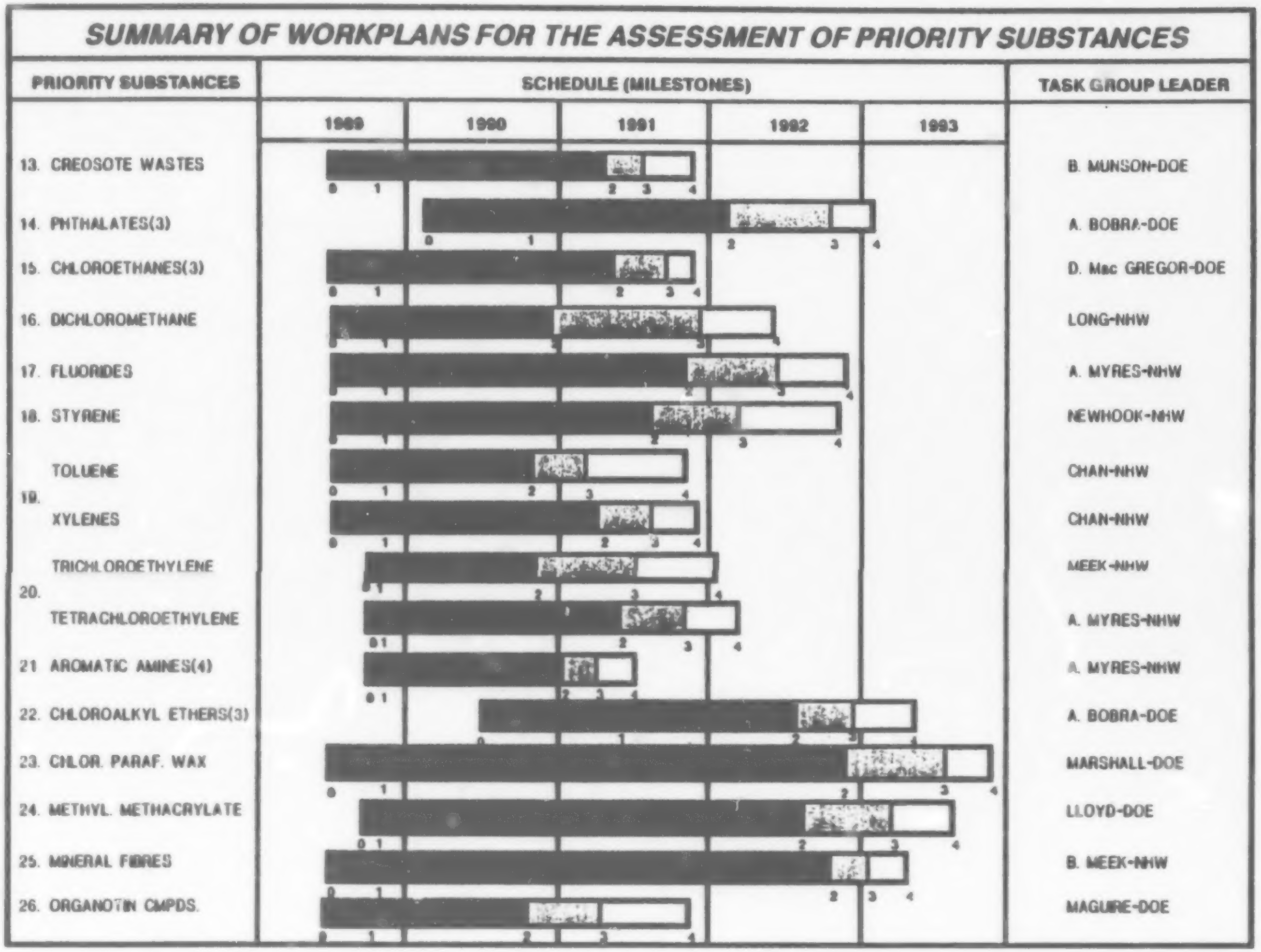


OVERVIEW SUMMARY FOR THE ASSESSMENT OF PRIORITY SUBSTANCES		
PRIORITY SUBSTANCES	SCHEDULE (MILESTONES)	TASK GROUP LEADER
1. ARSENIC		B. MEEK-NHW
2. BENZENE		A. BOBRA-DOE
3. PULP MILL EFF		D. HALLIBURTON-DOE
4. MTBE		D MacGREGOR-DOE
5. DIOXINS/FURANS	COMPLETED (CANADA GAZETTE PART I; MARCH 17, 1990)	M. BODDINGTON-DOE
6. PAH		B. NADON-DOE
7. WASTE CRANK. OIL		J. MYSLICKI-DOE
(6)		B. MEEK-NHW
8. CHLOROBENZENES		
(1-5)		B. MEEK-NHW
9. CADMIUM		D. MacGREGOR-DOE
10. CHROMIUM		NRIAGU-DOE
11. NICKEL		CHAU-DOE
12. CHLOR. W. WATER EFF.		SCHMIDT-DOE

0. TEAM LEADER CONFIRMED
1. WORK PLAN APPROVED BY CEPAMC
2. DRAFT REPORT REVIEWED BY PSS
3. CEPAMC APPROVAL
4. PUBLICATION IN GAZETTE I

OCT 22 1990

TABLE 3



SUMMARY OF WORKPLANS FOR THE ASSESSMENT OF PRIORITY SUBSTANCES

PRIORITY SUBSTANCES	TASK GROUP LEADER
13. CREOSOTE WASTES	B. MUNSON-DOE
14. PHTHALATES(3)	A. BOBRA-DOE
15. CHLOROETHANES(3)	D. Mac GREGOR-DOE
16. DICHLOROMETHANE	LONG-NHW
17. FLUORIDES	A. MYRES-NHW
18. STYRENE	NEWHOOK-NHW
19. TOLUENE	CHAN-NHW
19. XYLENES	CHAN-NHW
20. TRICHLOROETHYLENE	MEEK-NHW
20. TETRACHLOROETHYLENE	A. MYRES-NHW
21 AROMATIC AMINES(4)	A. MYRES-NHW
22. CHLOROALKYL ETHERS(3)	A. BOBRA-DOE
23. CHLOR. PARAF. WAX	MARSHALL-DOE
24. METHYL. METHACRYLATE	LLOYD-DOE
25. MINERAL FIBRES	B. MEEK-NHW
26. ORGANOTIN CMPDS.	MAGUIRE-DOE

0. TEAM LEADER CONFIRMED
1. WORK PLAN APPROVED BY CEPAMC
2. DRAFT REPORT REVIEWED BY PSS
3. CEPAMC APPROVAL
4. PUBLICATION IN GAZETTE I

OCT. 22, 1990

CCME

Canadian Council
of Ministers
of the Environment

Le Conseil canadien
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FACING NATIONAL ENVIRONMENTAL ISSUES - THE REVITALIZED CCME

Eva L.J. Rosinger, PhD, PEng

Director General
Canadian Council of Ministers of the Environment
139 Tuxedo Avenue, Winnipeg, Manitoba, R3N 0H6

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Eva L.J. Rosinger, PhD, PEng
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My purpose is to explain how the Canadian Council of Ministers of the Environment (CCME) is facing national environmental issues - how Canada's federal, provincial and territorial governments are addressing the large number of interjurisdictional and transborder issues being introduced, almost daily, to the public agenda.

I will do this by:

- outlining the agreement under which the 13 participants in the Canadian Council of Ministers of the Environment have agreed to cooperate;
- describing the recent restructuring and strengthening of CCME as an organization; and
- giving you a few examples of specific environmental issues on which our organization is now working.

Most of you will agree that, increasingly, Canadians are calling on their governments for environmental leadership and commitment. Canadians want their governments to make the environment a high priority on their political agendas, and they want nationally consistent environmental standards. For this reason, Canadians believe it is essential that our governments work cooperatively on environmental matters, taking advantage of the respective strengths and capabilities of each government.

Statement of Interjurisdictional Cooperation

Recognizing this, in November 1989 Canada's first ministers endorsed in principle a draft statement on interjurisdictional cooperation in the environmental field. This resulted in a formal Statement of Interjurisdictional Cooperation on Environmental Matters endorsed by the Canadian Council of Ministers of the Environment in Vancouver, British Columbia, in March 1990.

The statement provides a framework for intergovernmental cooperation on environmental matters - for formal agreements on environmental cooperation between neighbouring provinces or territories, and between provinces and the federal government.

Some of the assumptions on which the statement is based are:

- A genuine commitment by all governments to addressing and resolving environmental issues.
- The environment respects neither physical nor political boundaries, and all Canadians, individually and collectively, share responsibility for its protection; this implies public involvement in environmental decision-making.
- A commitment to the concept of sustainable development as a basis for the integration of environmental and economic activities; and effective intergovernmental cooperation, contributing to certainty and predictability of environmental regulation, promoting public confidence and sound economic planning.

On the basis of such assumptions, the governments agreed to work together, through a strengthened Canadian Council of Ministers of the Environment, to achieve the following:

- Harmonization of environmental legislation, policies and programs - and of their implementation
- Harmonization of environmental assessment and review procedures between and among jurisdictions
- Continued development of nationally consistent environmental standards and objectives
- Coordinated approach to the strategic management of interjurisdictional environmental matters
- Nationally consistent strategies on emerging environmental issues of national, international and global significance
- Development of bilateral accords and issue-specific agreements
- Continued development of a scientific database to support sound environmental decision-making
- Improvement of international and domestic linkages in the handling of environmental issues and the development of environmental standards
- Cooperation with other ministerial councils, such as the Federal-Provincial Ministers of Energy, the Wildlife Ministers Council of Canada and the Parks Ministers Council, and with other organizations, such as the National and Provincial Round Tables on Environment and Economy.

The governments also agreed that their objectives include work within each jurisdiction:

- To review environmental legislation and procedures to improve their capacity to cooperate on interjurisdictional issues
- To review relationships with other jurisdictions with the intent of developing appropriate interjurisdictional agreements to facilitate cooperation.

That, in essence, is the agreement that binds Canada's federal, provincial and territorial governments to work together in the environmental field.

CCME Organization

Now, I will describe briefly the organization through which most of this intergovernmental cooperation is taking place, the Canadian Council of Ministers of the Environment (CCME). The Canadian Council of Ministers of the Environment is the major intergovernmental forum in Canada for discussion and joint action on environmental issues of national, international and global concern. CCME has a long history of creating national environmental standards, objectives, codes of practice, and so on.

Environment ministers from each of the ten provinces, the federal government, and the two territories participate in regular CCME meetings at least twice a year. They meet to exchange information, make decisions, and provide direction to government officials for work to be carried out under the auspices of CCME.

Additional meetings of the Council of Ministers are held when special needs arise. One such occasion was a special meeting in August 1990. The Federal Minister of Environment discussed with his provincial and territorial colleagues the proposed federal Green Plan. The attending ministers said they were encouraged by the development of a Green Plan for Canada, called for the further participation of all jurisdictions in its development, and agreed to further consultations.

Meetings of the Council of Ministers are the core of the organization. But CCME is more than the sum of those meetings. It is a permanent organization, unique among Canadian intergovernmental institutions. It is the only Canadian organization that consists of ministers representing each of the 13 governments, a full-time secretariat, and a permanent organizational structure.

Early this year, CCME began a major restructuring in order to address more effectively the large number of important environmental issues facing the country. Last fall, CCME's deputy ministers concluded that the previous structure, consisting of many layers of permanent committees and subcommittees, made CCME too technically oriented to respond quickly to a fast-moving, priority-driven agenda. So they decided to create a flat, policy-oriented organization.

The organization we are now building is streamlined, designed to enable member governments to respond quickly to emerging environmental issues, set national strategies, decide on priorities, and develop long-term plans, as well as develop technical standards when necessary.

Between meetings of the Council of Ministers, the work of CCME is carried out by a national Committee of Deputy Ministers, a Management Committee and a full-time secretariat. The presidency of CCME, and other official posts, are rotated annually in pre-determined order among member governments. This year, the President of the organization and the Chair of the Council of Ministers is the Environment Minister of British Columbia, the Honourable John Reynolds. His Deputy Minister, Richard Dalon, is the Chair of the Deputy Ministers Committee. After our annual meeting, in November, the Chair of the organization will be assumed by Nova Scotia.

As Director General, CCME, I am part of the Deputy Ministers Committee and the Management Committee; I am also responsible for the establishment and operation of the Secretariat. My day-to-day reporting relationship is to the Management Committee, which consists of five deputy ministers.

As part of the restructuring, we are in the process of strengthening and expanding the Secretariat, having moved it from Toronto to Winnipeg in May, at the invitation of the Manitoba Government. At its full complement the Secretariat will consist of about 14 people. From time to time, it will also include specialists temporarily working on specific assignments, such as the implementation of major programs.

The basic role of the Secretariat is to provide sophisticated administrative, policy, communications and other support to the Council of Ministers, as well as to the various committees and task groups. We are structured accordingly, with a director responsible for each of three major areas - environmental protection, strategic planning and communications.

CCME Projects

Two permanent steering committees, Environmental Protection and Strategic Planning, each chaired by a deputy minister, provide ongoing policy advice to the Council of Ministers through the Deputy Ministers Committee. These steering committees coordinate all CCME projects by assigning them to specific ad-hoc intergovernmental task groups.

Task groups being formed by the Environmental Protection Committee cover a wide range of environmental issues. Two of the major categories currently being addressed are atmospheric and waste management issues. In the category of atmospheric issues, the Environmental Protection Committee is analyzing possible approaches to the integration of CCME activities related to ozone depletion, acid rain, climate change and other aspects of air quality, and coordinating the development and planned implementation of the national NOx/VOC Management Plan.

In the area of waste management, the effort to reduce packaging waste is a good example of how the Statement of Interjurisdictional Cooperation on environmental matters is being applied in practice. Last March, the Council of Ministers endorsed the National Packaging Protocol - a plan to reduce Canada's packaging waste by 50 percent by the year 2000. The protocol is being implemented by a task group of representatives from government, industry, environmental groups, consumer groups and other sectors of society. Costs for a comprehensive range of activities are being shared by CCME, its member governments, and industry. The activities include development of a national database to determine and monitor how much packaging waste is going to disposal, development of an industry code of practice, reviews of government practices and regulations, and public education.

Other waste management issues, as they arise, will likely fall within the mandate of the Environmental Protection Committee. An example is any possible follow-up to be done under the National Contaminated Sites Clean-Up Program. CCME provided the framework for this program, which is now moving into its bilateral federal-provincial implementation phase.

The Strategic Planning Committee addresses such interdisciplinary issues as harmonization of environmental assessment, state of environment reporting, and communications, including environmental education and public consultation. One of the key responsibilities of this committee is the establishment and operation of a long-term planning process, one that will ensure that CCME deals with the most important national environmental issues in a comprehensive, orderly and expeditious manner. For instance, beginning this fall, the process will involve a major, annual Environmental Scan to identify emerging environmental issues that will likely soon become of pressing concern to Canadians. These issues will be analyzed by the Planning Process Task Group and will be brought to the attention of the Deputy Ministers Committee and Council of Ministers, who will then determine priorities among the issues and consider possible concerted action.

We are confident that, in this way, the Canadian Council of Ministers of the Environment will continue to face effectively the large number of emerging national, interjurisdictional and transborder environmental issues.

For my part, I hope that I have given you an indication that the revitalized CCME is, indeed, succeeding in bringing our governments together for discussion and joint action on environmental issues of national, international and global concern. It is my personal belief that this form of intergovernmental cooperation will benefit Canada and all Canadians.

NUCLEAR POWER: A PROVEN SUSTAINABLE ENERGY SOURCE

by

Dr. Bill Hancox
Vice-President
AECL
Ottawa

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The balance of scientific evidence on the greenhouse effect, and the attendant effects of global climate change, indicates that it would not be prudent for the world to continue to produce energy by burning fossil fuels at today's level. Faced with the increasing energy needs of a growing population, the key question is: How can these needs be satisfied while minimizing the environmental impact?

I believe that nuclear power is an essential element in any program to limit the use of fossil fuels. To explain why this is so, I will address three main issues:

First, I will present a picture of the long-term global energy requirements. If we are to address energy supply in the context of a sustainable environment, we must look at the global situation and we must look far enough into the future to understand the real limits imposed by Nature and by the human social system. Without this understanding we cannot make intelligent strategic decisions on how to change our energy patterns.

Second, I will discuss the factors that will influence future energy supply from the various sources that are available. This will show why nuclear power is indispensable.

Third, I will give my perspective of the main concerns associated with nuclear power. These concerns must be allayed to gain public acceptance for a major expansion of nuclear power.

Energy Demand

It is an indisputable fact that global energy demand is continuing to increase. The increase is driven by increasing population and by the industrialization of the developing nations. In 1988 the population of the world totalled 5 billion people, of which 1.1 billion, or less than 25%, lived in the developed nations - the remaining 3.9 billion lived in the developing nations. The developed nations consumed on a per capita basis 6 times as much energy as those in the developing nations, even when the contribution of biomass, which is a major factor in many developing nations, is considered.

The total primary energy consumption was close to 400 exajoules (EJ). If the people of the developing nations had consumed at the same level as those in the developed nations the total would have been 1000 EJ. At the consumption rate of North America the total would have been 1500 EJ.

These are very large numbers when one considers that 1 EJ represents enough electricity for over 10 million Canadian homes for 1 year.

It is forecast that the world population will reach 10 billion some time during the next century and most people would consider that it is reasonable for the people of the developing nations to aspire to the same standard of living that is enjoyed by those in the developed nations. But if a world of 10 billion consumed energy at the same rate as the developed nations, the total energy demand would be over 2000 EJ. At the consumption rate of North America, the total demand would exceed 3000 EJ, or 8 times the total of 1988.

It is widely accepted that it is possible to substantially reduce the energy consumption of the developed nations through the use of energy efficient technologies and conservation. So, for the purposes of this discussion, I will establish an ambitious target, such that in the long-term, the global average per capita energy consumption becomes only one-third of the current North American average, that is 100 gigajoules per person. Therefore 10 billion people would demand 1000 EJ.

Let me put this consumption level in perspective. A gigajoule (10^9 joules) represents the energy content of about 20 litres of gasoline. Thus, 100 gigajoules is equivalent to each person consuming 2000 litres of gasoline each year. Considering that this allowance must cover the total energy needs of a person for a year it does not seem overly generous.

Energy Supply

Now, how could 1000 exajoules per year be supplied? For reference, consider how the energy for 1988 was supplied. In 1988, nuclear supplied 9 EJ, hydro supplied 25 EJ, solar and wind supplied only a small fraction of an EJ, biomass supplied 55 EJ, and fossil fuels supplied 304 EJ.

It is reasonable then to ask: What can each of these sources provide in future? First let's look at today's dominant energy source - fossil fuels. Since the Changing Atmosphere Conference in Toronto in 1988, much attention has been paid to the role of carbon dioxide in the greenhouse effect and global warming. There is still uncertainty concerning the tolerable level of carbon dioxide emissions for a stable climate. The Changing Atmosphere Conference recommended a reduction of 20% from current emission levels, in order to avoid adverse climatic effects. I will adopt this recommendation, and restrict fossil fuels to 240 EJ.

However, I must note that the prospects of attaining this reduced level are not good. The World Energy Conference, in its most recent study of global energy demand and supply, forecasts that fossil fuels are likely to supply 420 EJ in the year 2020, some 180 EJ above the target. This would result in a 78% increase in carbon released to the atmosphere above the 1988 level.

The World Energy Conference calculates the total hydro potential of the world to be about 50 EJ. I will assume that it can all be developed, in spite of the growing public opposition to some hydro developments.

Although biomass, particularly fuelwood, is a relatively mature technology, I will assume that its contribution can be doubled to 110 EJ.

An ambitious target should be set for the renewables, wind and solar. So I will assume that they can be developed to supply 50 EJ, roughly 100 times their present contribution.

The total contribution of these supply options is 450 EJ, leaving a supply deficit of 550 EJ. This is a deficit of 55% of the required energy, or nearly 1.5 times the total consumption in 1988. There is only one proven source of supply remaining - nuclear energy. Recall that this is after an efficiency and conservation target of 1000 EJ has been applied to reduce the demand from 2000 EJ.

One can change the assumptions that I have made, but I submit that any realistic set of assumptions will lead to the same conclusion. I believe that these arguments should be enough to convince the most uncertain member of the public of the need for nuclear energy. Clearly, nuclear energy will not satisfy the demand by itself, but it must make a major contribution.

Nuclear Energy

Now that I have looked at the need for nuclear in the context of meeting the future energy demand, I will discuss the environmental sustainability of nuclear energy relative to three public and environmental protection issues:

- Mitigation of hazards associated with potential accidents.
- Radiation releases during normal operation.
- Disposal of radioactive wastes.

I will use the Canadian approach as the model.

Today, Canada has a CANDU nuclear-electricity system with a capacity of about 13,200 MW: almost 12,000 MW in Ontario, 600 MW in Quebec, and 600 MW in New Brunswick. The capacity will increase to 15,800 MW in 1993 when the final Darlington unit enters service, representing a total investment of about $30 billion. The CANDU technology is the product of a comprehensive Canadian research, development and demonstration effort in the 1950's and 60's, and which continues today, providing improvements to public and plant safety, environmental protection, and station operating performance. The total cost of this research, development and demonstration program to date is about $4 billion.

During 1989, this system produced 16% (70 TWh) of Canada's electricity and 49% of Ontario's at an average cost of about 30% less than coal-fired electricity. The CANDU-generated electricity avoided the discharge to the atmosphere of about 15 million tonnes of carbon annually, about 10% of Canada's total emission to the atmosphere.

Mitigation of Hazards Associated With Potential Accidents

The most serious potential hazard presented by a nuclear reactor, as everyone knows after the accidents at Three Mile Island and Chernobyl, is that an accident can cause the nuclear fuel to overheat and release radioactive fission products. The likelihood of such an accident is small, as demonstrated by the 5,500 reactor-years of operation throughout the world.

The Canadian approach to ensure the safety of nuclear reactors is to design them to meet the most stringent safety standards. There are four primary goals.

First, the designer anticipates potential failures and designs the reactor to accommodate them.

Second, the reactor is built and operated to the highest quality standards.

Third, the reactor is equipped with fast acting safety systems whose only functions are to arrest an accident before it damages the reactor.

Finally, should any radioactivity be released from the fuel, it is contained by a massive reinforced-concrete, leaktight building.

The Atomic Energy Control Board, Canada's nuclear regulator, sets the safety standards and ensures that they are satisfied by overseeing the design, construction and operation of all Canadian reactors. One demonstration that these goals are being met is that CANDU reactors have a very low rate of equipment failure and, consequently, a high availability. Up to March 1990, four of the world's top five reactors, in terms of lifetime availability, were CANDU reactors. Light Water Reactors, the dominant reactor type today, have also achieved very high levels of reliability as demonstrated by over 5,000 reactor-years of safe operation accumulated to date, despite the accident at Three Mile Island.

Professor Ken Hare, one of Canada's most distinguished environmental scientists, recently completed a review of the safety of Ontario Hydro's reactors for the Government of Ontario. He gave CANDU a clean bill of health and concluded that there are no safety grounds for abandoning the nuclear option.

Containment of Radiation

There are two main environmental issues: the first relates to discharges of radioactive liquids and gases during normal operation and the second to the permanent disposal of radioactive wastes, including those resulting from the eventual decommissioning of the station.

All gas and liquid emissions from a CANDU reactor are monitored to detect the presence of radioactive contaminants, and strict limits for releases are set by the Atomic Energy Control Board. The detailed operating records show that radioactive materials are effectively contained within the reactor. Releases are typically maintained at about 1% of the limits. The result is that the potential radiation dose contributed by these releases is negligible when compared to that from the natural sources of radiation present. Thus, normal operation would not be expected to present a health hazard.

This has been confirmed by a recently released study by the United States National Cancer Institute. Researchers from the Institute studied the risk of cancer death for people living in 107 U.S. counties containing or close to 62 nuclear facilities, including 52 commercial power plants and 9 Department of Energy weapons plants. Death rates from 16 types of cancer, including leukemia, before and after startup of the facilities were compared to similar rates in 292 counties without nuclear facilities. The study found no evidence of increased risk caused by living near the nuclear facilities. The researchers also found that cancer incidence resembled the mortality patterns. The scope of this study is the most comprehensive of its kind and should reassure the public that there is no increased risk of cancer or leukemia around commercial nuclear power plants.

Now let me discuss the safe management of the radioactive wastes - primarily the used nuclear fuel.

The major positive factor in managing the used fuel is that the volume is relatively small: all the used fuel produced in Canada over the last 28 years, when the first CANDU reactor began operation, could be stored in one Olympic-size swimming pool. By the year 2000, the volume will have increased to only three Olympic-size pools.

Today, the used fuel is stored in water-filled pools at the nuclear power stations. Over forty years of experience with fuel from research reactors and power reactors shows that this method of storage is safe and economic for many decades.

Although storage in water-filled pools is suitable for many decades, a facility for permanent disposal is needed, with no requirements for continued monitoring and maintenance by future generations.

Several assessments of disposal methods have been completed, including those by Sweden, Switzerland, the International Atomic Energy Agency, and the European Economic Community. They have all concluded that disposal deep in stable geologic formations is a suitable method which can isolate the radioactive materials for thousands to hundreds of thousands of years.

To me the most compelling demonstration that geologic disposal can provide the isolation required is provided by the natural example of the Cigar Lake uranium deposit in Northern Saskatchewan, which we have studied since 1984. The rich uranium deposit is completely encased in clay and is virtually undetectable just metres away. This high level of stability, which has been maintained for the billion years since the deposit was formed, is explained by the extremely high resistance of uranium oxides to dissolution by natural ground waters.

Further natural evidence has been provided from investigations of a uranium ore deposit at Oklo in West Africa. Two billion years ago, a nuclear fission reaction began in this deposit and was sustained for about 50,000 years. The most important finding is that plutonium and other radioactive materials produced during the operation of this natural reactor remained within the surrounding rock.

The Canadian concept is disposal of used fuel sealed in corrosion resistant containers deep in stable granite formations of the Canadian Shield. One disposal facility, occupying an underground area 2 by 2 kilometres, would hold 100-years output of used fuel from the committed Canadian nuclear program.

This concept is the product of ten years of comprehensive research. Our confidence in its safety is sufficiently strong that we have submitted our assessment for review by an independent, third-party panel under the Federal Environmental Assessment Review Process. The review will involve not only detailed scientific scrutiny but also extensive public hearings, so the general public will be able to provide input and make informed decisions. I am confident that when all of the facts are presented, the review panel will agree that used fuel can be safely isolated from our environment.

Conclusion

All that I have said this afternoon leads to the conclusion that nuclear energy must play a major role in supplying the world's growing energy needs if the requirements for a sustainable environment are to be attained.

I appreciate that you might be skeptical when you consider this conclusion in the light of decisions taken in Sweden to implement a phase out of nuclear power beginning in 1995, and in Switzerland, Italy and Germany to declare a moratorium on further construction of nuclear plants.

The Swedish decision provides an interesting case study. In 1980 the Swedish Parliament voted to shutdown and decommission each of its 12 nuclear plants after 25 years of operation. This means that the first plant will be shutdown in 1995 and the last in 2010. Note that when the decision was taken in 1980, six of the 12 plants were still in various stages of construction. The Swedish Parliament added several caveats to the phase-out decision: economic welfare and employment levels be maintained, oil and coal use must not increase, and renewable power sources must be available to replace shutdown generating capacity.

Despite a rigorous electricity efficiency and conservation program, electricity demand has continued to grow uniformly throughout the intervening ten years. In 1989, the 12 nuclear plants supplied 45% of Sweden's electricity, hydro supplied 51% and fossil fuels and imports supplied the remaining 3%. From a carbon emission standpoint, a model system. However, in 1989, the demand reached the supply ceiling set by the Parlimentary decisions. Earlier this month, Sweden's ruling Social Democrats, under pressure from labor unions concerned about lost jobs, effectively abandoned their commitment to phase out nuclear power by 1995.

Fortunately, nuclear and hydro will continue to keep Sweden's per capita electricity related carbon emissions the world's lowest.

HAZARDOUS WASTE MANAGEMENT: POLICIES AND STRATEGIES FOR CHANGING ATTITUDES

by

Raymond P. Côté
School for Resource and Environmental Studies
Dalhousie University
Halifax, Nova Scotia

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The subject of this conference is changing attitudes about the environment in the 1990's. In the case of hazardous wastes, it struck me that many of you are probably worrying about the siting of storage, transfer, treatment and disposal facilities. From your perspective then, your specific interest may actually be in trying to change the attitudes of people about the risks associated with the management of hazardous wastes. But if we, society, are really going to deal effectively with the hazardous waste problem, we need to change attitudes about development in the 1990's. A start in that direction has been made by the Canadian Chemical Producers Association with their "Responsible Care Program" and by other industry associations with codes of practice. But there remains a long way to go before we really ask the substantive questions.

My message is not new. It is similar to those expressed by others over the past few years. For example the Minister's Task Force on Hazardous Waste Management in Nova Scotia formulated five guiding principles in 1986 as a basis for developing its recommendations: i) a comprehensive strategy; ii) public participation; iii) an emphasis on prevention; iv) assuming responsibility for management of their own wastes and; v) not generating wastes unless there are effective disposal methods.

I will discuss policy issues and strategies which apply at the national level, which translates into cooperation and coordination between federal and provincial levels of government, and at the local level, where waste storage, transfer, incineration and disposal takes place. And I want to underline that last point, because at the community level, we are dealing with real people, not in the abstract.

THE DEFINITION PROBLEM

The first issue which, in my view, has to be addressed is the definitional problem. And this issue applies to all levels of jurisdiction. I realize that lawyers and technocrats need some limits against which chemicals can be measured for treatment specifications and for enforcement purposes. My perception is that the narrow definitions which have been applied have served to confuse rather than educate the public. I suspect that confusion also exists in a variety of institutions and commercial establishments. The following types of statements exemplify this situation: "Chemical X is considered hazardous but concentration Y of that same chemical in contaminated soil means it is not a hazardous waste." "Pesticides are not toxic chemicals, by legal definition and may not be subject to hazardous waste management policies and regulations." As a corollary, the different standards applied by municipal landfills and provinces add to the confusion. A case in point is the debate which took place over a period of months in Halifax on whether soil contaminated by a metal salvage operation should and could be disposed of in the Halifax-Dartmouth metropolitan landfill or whether it should be classified as a hazardous waste requiring a specialized disposal site.

Hazardous waste is only one of the terms associated with the management of chemicals and only one of the facets of chemical waste management. A successful resolution of the hazardous waste problem requires that all levels of government, but specifically the federal and provincial governments, approach the problem within the overall context of chemical waste management. There has been extensive discussion of the life - cycle concept when dealing with chemicals, and yet when a particular problem arises, the context is not explained.

In addition, I am also of the opinion that the scope of the problem has been underestimated and may have been purposefully understated in some jurisdictions. The focus to date has been on industrial wastes and to a lesser degree, on abandoned sites and on institutional and more recently household hazardous wastes. Hazardous wastes encompass industrial wastes, waste consumer products, institutional wastes particularly from chemical laboratories and hospitals, waste pesticides, banned chemicals, spilled material, abandoned disposal sites, contaminated sites both recent and historical, and contaminated sediments in harbours. In the case of contaminated sites, for example, there appears to have been an emphasis on sites created since the 1950s, when we know that hazardous chemicals were used in a wide range of industrial and commercial operations in the late 1800s and early 1900s. A case in point is Truro, Nova Scotia, which had a felt hat manufacturing plant in the 1920s and was probably using mercury in that process; this was the derivation of "Mad Hatter's Syndrome".

The public has to see and understand that governments clearly recognize the scope of the chemical waste problem but within that scope have had to select certain priority areas for immediate attention. A few years ago, the Nova Scotia government found tetrachoroethylene in drinking water supplies of several communities and very quickly settled on improperly disposed of dry cleaning solvent as the cause of the problem. Because the scope of the problem was not explained, they left the impression with the public that threats to drinking water from chlorinated solvents had been eliminated. But the dry cleaning solvents are a small part of the problem. Chlorinated solvents are widely used in a range of industrial, commercial, institutional and domestic applications. The public needs to understand the nature and scope of the issue as well as the part they play in exacerbating or minimizing it.

THE MANAGEMENT BALANCE

The second issue is the management balance. The emphasis of hazardous waste management in Canada to date has been on minimizing the effects of wastes on human health and other parts of the environment through storage, treatment and final disposal. A concurrent effort must be undertaken on preventing the generation of the wastes in the quantities and concentrations in which they currently exist. This view is strongly supported by the World Commission on Environment and Development: "The overriding policy objective must be to reduce the amount of waste generated and to transform an increasing amount into resources for use and re-use" (WCED,1987). We may not be able to reduce these wastes to zero, but I am certain that the right combination of applied research, technology, economic instruments and legal sanctions can reduce quantities in some sectors substantially.

Regulations when first proposed are often considered technically unrealistic but human ingenuity and technology seem to rise to the challenge. In the early days of automobile emission regulations in the United States, the conflict between the profits of the automobile industry, energy efficiency and pollution control.objectives was thought to be an impossible technical and economic trade-off. However within a few short years, most of the conflict had been resolved through new technology. The average fuel efficiency of car models has improved while air emissions have dropped (Repetto, 1986). In the past twenty years we have seen many barely conceivable developments:--genetic engineering; -- microelectronics; -- new ceramics, composites and fiber-reinforced plastics; --optical radio communication systems; --remote sensing technologies, to name but a few. I do not believe any assumptions can be made about the limits of technology in pollution control.

There may well be a limit in terms of the improvement in efficiency of manufacturing, energy production, transportation and consumption which may be expected in a waste minimization initiative. This is, of course, because we have to consider optimal rather than maximal efficiency. A comprehensive approach requires that we recognize that action in one area will result in a reaction somewhere else. The basic laws of thermodynamics seem to apply particularly well to environmental issues and especially to waste management.

Unfortunately, Canada seems to be far behind France, Sweden, Australia, the U.K. and the United States in the area of waste minimization and clean technology. In these countries, information programs, technical assistance, financial incentives and applied research is being directed to the reduction of wastes. Concern is often expressed by industry that the application of increasingly stringent regulations will reduce the competitiveness of Canadian products abroad. It seems to me that if those products were more efficiently manufactured, this issue could be an opportunity rather than an impediment.

We need to look at what is being done in other countries and find ways of increasing the competitiveness of new approaches and technologies for hazardous waste management. To this point in time we have directed our efforts to partial solutions. There is evidence that there is natural tendency for individuals and groups to settle for adaptations which are incomplete and often inadequate because of the difficulties of mounting cooperative and multi - disciplinary ventures. The time apparently lost in agreeing on basic principles and understanding different perspectives is often perceived as unacceptable. Our attempts to find more effective and acceptable solutions to the problems of hazardous wastes has been affected by this tendency. The involvement of different disciplines and interests provides much larger response pools on which to draw, and consequently much greater opportunities for more complete solutions (figure 1). The success of the Alberta program seems to support this notion as do some of the stakeholder exercises initiated by Environment Canada, and yet there appears to be reluctance among government bureaucracies to make greater use of such multi-disciplinary, multi-interest groups.

The question of balance must also be addressed in the regulatory framework. A comprehensive rather than an ad hoc approach is required if a climate of trust and understanding is to be established. Undue emphasis on limited aspects of the hazardous waste problem such as components of the PCB life cycle, on contaminated fuels or on one element in a multiple exposure situation may result in some benefit to a few individuals but the attitudinal changes in the wider community that are so necessary, will not be produced. Such a situation exists in Sydney, Nova Scotia where $40 million is being spent to clean up the "tar pond". Unfortunately little or nothing is being done to study and inform residents about the many other exposures to PAH, a number of which are likely to present a greater human health risk. These exposures include cigarette smoking, asphalt/tar production and road construction, smoked foods, domestic coal burning and diesel exhaust among others.

AN ECOSYSTEM APPROACH

The third issue is the need for an ecosystem perspective.In the 1990's and as we approach the year 2000, we collectively, governments, industries and individuals must begin using a sustainability perspective. This means considering wastes as misused or misplaced resources, resulting to a large degree from inefficiencies in industrial, energy and transportation systems and in consumer consumption patterns. Tackling the efficiency problem normally involves such techniques as process modification, equipment re-design and material substitution. But we can be a little more innovative in our strategies.

One of the more interesting concepts described recently in a paper by Frosch and Gallopoulos (1989) of General Motors is the "industrial ecosystem". The latter is an operation in which "the consumption of energy and materials is optimized, waste generation is minimized and the effluents of one process serve as the raw material for another process". The model is, of course, a natural ecosystem. An industrial ecosystem with complete recycling, recovery and re-use of material and energy i.e. zero discharge, may never be attained in practice in all industrial sectors but it is a goal worth pursuing in our search for sustainability. Repetto (1986) argues that " sustainable development requires that designs bend from the linear toward the circular" with an expected improvement in system efficiency. Application of the concept of the industrial ecosystem ought to be encouraged by all levels of government through appropriate incentives, research programs and regulations. At the local level, the concept could be applied to industrial parks wherein commercial and industrial facilities are co-located so as to take advantage of under-utilised chemicals, water, materials, heat, etc.(figure 2). This requires a planning system and an information base to ensure that the environmental benefits are given priority in encouraging industries to locate in the park. Federal and provincial governments, in joint ventures with industries, could support demonstration projects in this area.

As a corollary, we need to think about designing and formulating chemical products with eventual fate, material recovery, re-use and treatment in mind. Qualities such as flexible and convenient will have to be replaced with durable, re-usable and treatable. Industry should take the lead in this area but governments may have to require material recovery or socially as well as technologically acceptable destruction plans for new products, whether used in industrial or consumer quantities, are available before they are approved for use. The Canadian Environmental Protection Act satisfies some of the need but does not go far enough. Nor do current environmental codes of practice developed by industrial associations.

THE PEOPLE CONNECTION

There are two aspects of the people connection, the fourth issue, that I want to mention. The first considers the relationship between people and technology while the second focusses on the communities of people where waste storage, transfer, treatment and disposal facilities are located.

When governments and industry try to sell communities on the safety of these facilities, the emphasis has generally been on the technology. And I am of the opinion that the new technology is quite effective in treating and destroying chemical wastes. Unfortunately, the weak leak in the chain is often the human element. In fact, you may be surprised to hear that this was one of the main messages that Rachel Carson was attempting to convey in "Silent Spring". Garrett Hardin (1985), perhaps better known for his discussion of the tragedy of the commons, has written a new book in which he examines, among other topics, the pursuit of reliability. He reminds us that system reliability, say for example at a waste treatment facility, is the product of technology reliability and the human reliability; he notes that the reliability of the total system is less than that of the less reliable component. And as we have seen in the case of many chemical accidents, the least reliable component is the human one. Hardin writes "people make machines, people test them, people record the results of the tests, people certify to the examination of the records, people reexamine the machines after use, record the results and certify the recordings, and so on... The paths to error are beyond numbering". He concludes by stating that by pushing technology to its furthest limits, humans have become more dependent on themselves.

We need to remember this when proposing hazardous waste management facilities. More attention has to be paid to all the people who are associated with the design, construction and particularly operation of any facilities. In particular more emphasis must be placed on training, monitoring, audits and incentives. In the case of facilities viewed as being threatening, when one individual does not do the best job which can be done, this reflects on the whole operation. The result may be pressure to prevent a facility from being constructed, pressure to close the site down, or a continuing battle in the media to convince local residents that the facility is safe.

The second point relates to the fact that communities are composed of people, and the needs of people are often expressed on a community basis by way of moral standards, aesthetics, by-laws as examples. Siting facilities which, rightly or wrongly, appear to interfere with the satisfaction of those needs will, in my view, not be accepted simply by appealing to the argument that this is better for the environment, or that the overall threat from chemical wastes X, Y and Z will be reduced. Bowman (1985) describes this as the classic example of concentrated costs and dispersed benefits.

First extensive and intensive consultations should be held on the principles on which a waste management program is based. Then local residents will have to be involved in all aspects of the decision-making process, satisfying themselves that they have some control over the human element of the system. One tactic would involve the use of negotiated agreements between the community, the provincial government and the operator of the site which stipulates the involvement of the parties and the conditions under which the facility will operate. And once that agreement is in place, the facility must be operated on that basis. Any deviation will result in a breakdown of the trust which may have been generated to that point in time. Government and industry promoters of a waste management facility should also consider whether the community has other needs that might be met if and when the facility is accepted. Options for satisfying those needs, for example an improvement in fire prevention and response, or community health programs might be needed. The promoters will have to find ways of satisfying them without appearing to bribe the community.

CONCLUSION

I have attempted in this paper to identify a number of issues and strategies which must be addressed if changes in attitude are to be realized. In my view, a more comprehensive and balanced framework must be elucidated and any actions taken by governments and industry to manage hazardous wastes must occur within that framework. In each case, the relationship between the framework and the action must be thoroughly explained to the public. In addition, the strategies should emphasize a ecosystemic approach and recognize the limitations in the human element of the management system.

The combination of strategies that must be employed to effectively manage this problem will have to address both the supply and the demand side (figure 3). This translates into initiatives aimed at the producers and the consumers with an increasing emphasis on needs and alternatives and the developmental chain which results in the generation of chemical wastes. In the final analysis, however, the change in perspective and attitude that is necessary will be achieved when we think less about a hazardous waste management policy and more about industrial development, energy and transportation policies which truly integrate environment and economy.

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Figure 1

Managing Hazardous Wastes: A Multidisciplinary Effort

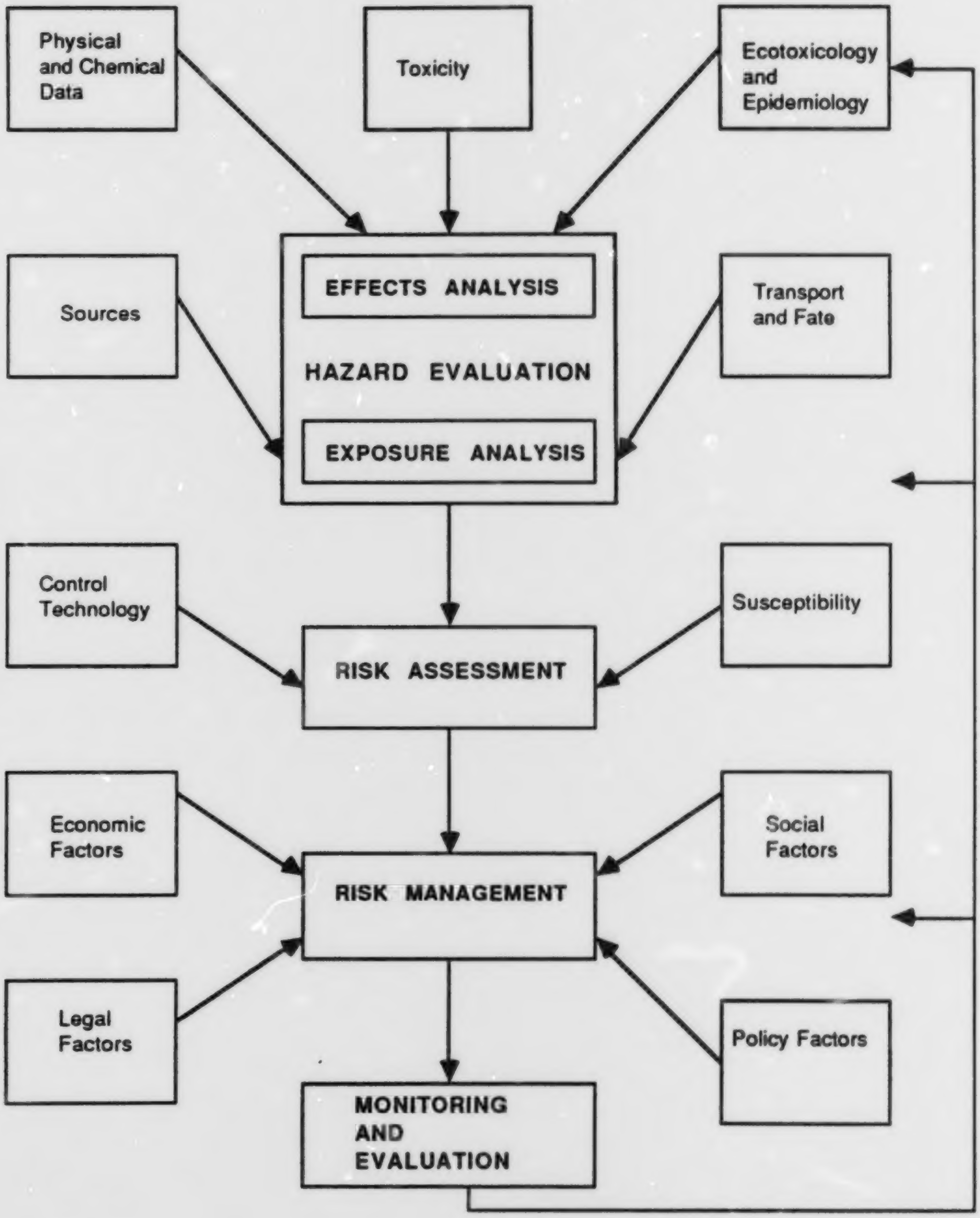
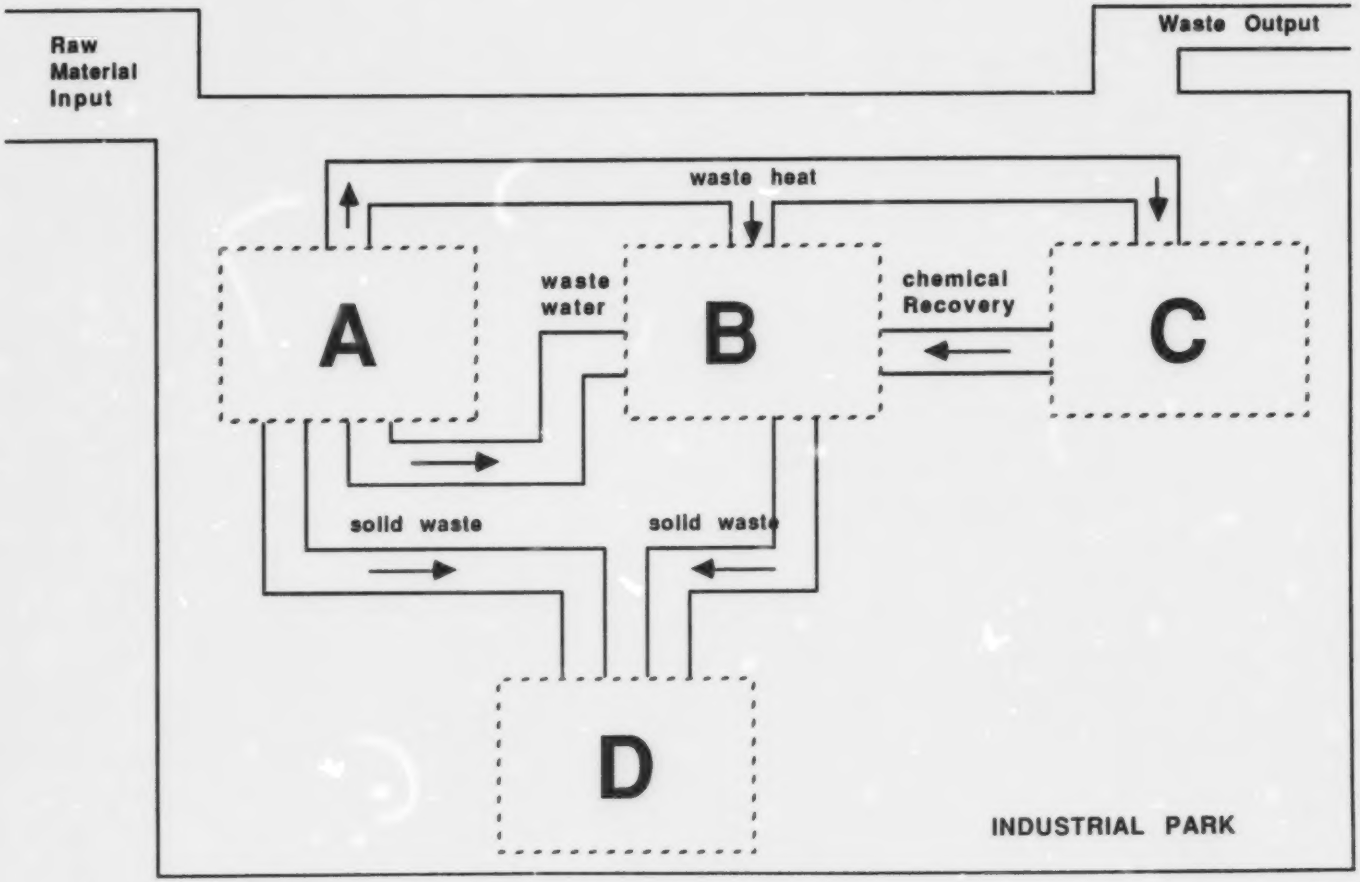
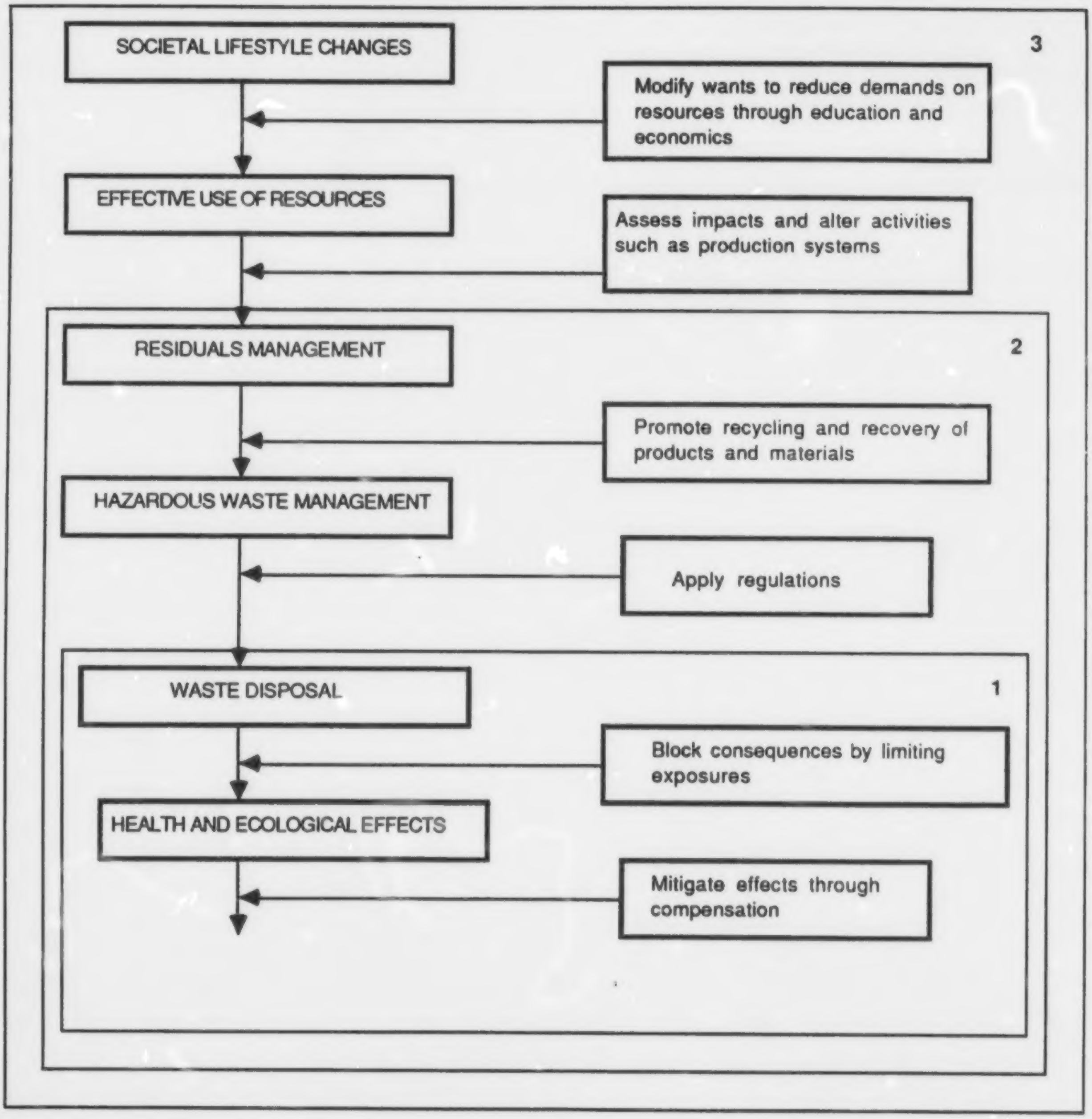

Physical and Chemical Data
Toxicity
Ecotoxicology and Epidemiology
Sources
EFFECTS ANALYSIS
HAZARD EVALUATION
EXPOSURE ANALYSIS
Transport and Fate
Control Technology
RISK ASSESSMENT
Susceptibility
Economic Factors
RISK MANAGEMENT
Social Factors
Legal Factors
Policy Factors
MONITORING AND EVALUATION

Figure 2. A simplisitc model of environmental management of an industrial park based on sustainable development principles


Raw
Material
Input
Waste Output
waste heat
A
waste
water
B
chemical
Recovery
C
solid waste
solid waste
D
INDUSTRIAL PARK

* Supported by environmental impact assessment of the park itself and risk analysis of each of the industries using or storing hazardous chemicals

Figure 3. A hierarchical decision-making framework for waste management in the context of environmentally sustainable economic development. The framework can be used by industry, government and individual consumer.


SOCIETAL LIFESTYLE CHANGES
3
Modify wants to reduce demands on resources through education and economics
EFFECTIVE USE OF RESOURCES
Assess impacts and alter activities such as production systems
RESIDUALS MANAGEMENT
2
Promote recycling and recovery of products and materials
HAZARDOUS WASTE MANAGEMENT
Apply regulations
WASTE DISPOSAL
1
Block consequences by limiting exposures
HEALTH AND ECOLOGICAL EFFECTS
Mitigate effects through compensation

1. **ENVIRONMENTAL PROTECTION**
2. **ENVIRONMENTAL MANAGEMENT**
3. **SUSTAINABLE DEVELOPMENT**

HAZARDOUS WASTE MANAGEMENT:

Minimizing and Avoiding Liabilities

Prepared by

Brian O'Ferrall
BENNETT JONES VERCHERE
Calgary, Alberta

HAZARDOUS WASTE MANAGEMENT

Minimizing and Avoiding Liabilities

Table of Contents RE: Decisions

TAB #

Definition of "Waste":

1. R. v. St. Michael's Hospital, (1987) 2 C.E.L.R. (N.S.) 327, (Ont. Dist. Ct.)
2. R. v. Imperial Oil Ltd. (1988) 4 C.E.L.R. (N.S.) 98, (Man. Prov. Ct.)
3. R. v. Finlay Forest Industries Ltd. (1988) 2 C.E.L.R. (N.S.) 279, (B.C. Co. Ct.)

Confusion as to Statutory/Regulatory Requirements:

4. The Bedford Service Commission v. The Attorney General of Nova Scotia and The Halifax-Dartmouth Regional Authority [1977] 2 S.C.R. 269, (SCC)

   Attorney-General of Nova Scotia et al v. Bedford Service Commission (1976) 72 D.L.R.(3d) 639 (N.S. S.C.)

Site Selection:

5. Re Town of Milton et al. and Ontario Waste Management Corp. et al. (1985) 50 O.R.(2d) 715, (Ont. H.C.J.)
6. Calgary (City) v. Public Health Advisory & App. Bd. (1986) 1 C.E.L.R. 62, (Alta. Q.B.)
7. Waste Not Wanted Inc. v. R. (1987) 2 C.E.L.R.(N.S.) 24, (F.C.T.D.)
8. Re Boise Cascade Canada Ltd. (1987) 2 C.E.L.R.(N.S.) 66, (Environmental Assessment Board)
9. Waste Management Permit PR-7577 Re (Village of Cache Creek Landfill), (1987) 2 C.E.L.R. (N.S.) 289, (B.C. Environmental Appeal Board)
10. NSP Investments Ltd. v. Ontario (Joint Bd. established under Consolidated Hearings Act) (1990) 4 C.E.L.R.(N.S.) 279, (Ont. S.C. [Div. Ct.])

Statutory Compliance:

11. Friends of the Oldman River Society v. Alberta (Minister of the Environment) (1987) 2 C.E.L.R.(N.S.) 234, (Alta. Q.B.)
12. Alberta Wilderness Association et al. v. Her Majesty the Queen in Right of the Province of Alberta et al. (1988) Reasons for Judgment (Medhurst) (8701-18938 and 8701-20862)
13. Friends of the Old Man River Society v. Energy Resources Conservation Board (Alta.) (1988) 89 A.R. 280, (Alta. C.A.)
14. Friends of Oldman River Society v. Alberta (Minister of Environment) (1988) 89 A.R. 339 (Alta. Q.B.)

    Friends of the Oldman River Society v. Minister of the Environment of Alberta et al. (1988) 4 C.E.L.R.(N.S.) 129, (Alta. Q.B.)
15. Assn. of Stop Construction of Rafferty Alameda Projects Inc. v. Saskatchewan (Minister of Environment & Public Safety) (1988) 3 C.E.L.R.(N.S.) 236, (Sask. Q.B.)
16. Cdn. Wildlife Federation Inc. v. Canada (Minister of the Environment) (1989) 3 C.E.L.R.(N.S.) 287
17. Cdn. Wildlife Federation Inc. v. Canada (Minister of the Environment) (1989) 4 C.E.L.R.(N.S.) 1, (F.C.A.)

18. Friends of the Oldman River Society v. Canada (Minister of Transport) (1989) 4 C.E.L.R.(N.S.) 137, (F.C.A.)

19. Cdn. Wildlife Federation Inc. v. Canada (Minister of the Environment) (1989) 4 C.E.L.R.(N.S.) 201, (F.C.A.)

20. Friends of the Oldman River Society v. Canada (Minister of Transport) [1990] 2 F.C. 18, (Ont. C.A.)

21. Damning the Opposition; EARP in the Federal Court, by Marie-Ann Bowden, 4 C.E.L.R.(N.S.) 227

Liability for Contamination:

Heighington et al. v. the Queen in Right of Ontario et al. (1989) 4 C.E.L.R.(N.S.) 65, (Ont. C.A.)

HAZARDOUS WASTE MANAGEMENT

Minimizing and Avoiding Liabilities

As a lawyer I came before you with the "narrow perspective" identified by Dr. Roy Cote - Lawyers look at things on a microscopic basis.

What Liabilities?

1. Liabilities to the regulators - ie. avoiding getting into trouble with the environmental authorities
2. Liabilities to your neighbor - ie. Avoiding getting sued for damages caused your neighbor
   and
   - avoiding having your neighbor get an injunction to shut you down
3. Criminal Liabilities - ie. avoiding going to jail or being slapped with the big fine

Means by which environmental liabilities may be minimized or avoided:

1. Know the law - know what your liabilities are
   - difficult - go to paper!
2. Practise due diligence
   - (a) Conduct appropriate environmental searches
     In Alberta
     - (i) title; historical searches
     - (ii) reclamation certificates or reclamation orders (one indicates reclamation; the other warns of an outstanding reclamation problem)
     - (iii) Pollution Control Division of Alberta Environment (letter from A.E. describing enforcement procedures (stop orders/ control orders) back to 1971
     - (iv) waste and chemicals division (letter from A.E. describing enforcement procedures (stop orders/ control orders) back to 1971
     - (v) standards and approvals - discloses whether permits and licences have issued
   - (b) Document review - seek and ye shall find; failing that, if you have asked for a specific document and it was not forthcoming, you will have an action in deceit against vendor in the case of a purchase of land, shares or assets
   - (c) Inspect the site - interview those knowledgeable about the property or the operation's environmental history -Environmental Audit by someone qualified to do an audit
3. Judiciously select the site of your waste management operations/activities

4. Contract out of environmental liability - endeavor to shift responsibility to others

5. Insure yourself against environmental liabilities

6. Criminal Liabilities - R. v. Imperial Oil Ltd. (1988) 4 C.E.L.R. 98, (Man. Prov. Ct.) (Judge Giesbrecht)

7. Civil Liability

8. Recent Alberta Developments

   (a) NRCB Act

   (b) E.P. & E. Act

   Environmental Legislation and Review Panel

R. v. Imperial Oil Ltd.

- a Manitoba Prov. Ct. Case

FACTS:

1. In the early 1970's, Manitoba (like many other provinces) enacted environmental legislation. It was called the Manitoba Clean Environment Act.

2. In 1976, four years after the Act was passed, regulations requiring the registration of all gasoline storage tank facilities in Manitoba were made pursuant to the Clean Environment Act. (Alberta still does not have mandatory registration requirements for underground storage tanks, let alone above-ground storage tanks; although, Gavin Hamilton is working on it.).

3. Now Imperial Oil had a bulk plant at Souris, Manitoba at the time this regulation was made. So, being a good corporate citizen, it registered its tanks with the authorities as required by the regulation, setting out, among other things, the number of tanks (7), the products contained therein and the precise location of the tanks.

4. In 1985, some years after the tanks had been installed, changes were made to Imperial's Souris storage tank system. However, Imperial neglected to notify the authorities of this change; and that was a breach of the regulations and a breach of the regulations is an offence under the Manitoba Clean Environment Act.

5. The changes which were made to the tank system are critical to an understanding of this case:
   - All seven of the original tanks were removed from the site
   - Five were scrapped
   - Two were refurbished (new bottoms were installed) and returned to the site
   - A third brand new tank was also brought onto the site
   - The two refurbished and the brand new tank were then hooked back up to the existing piping
   - Values leading to the abandoned piping (which had been attached to the tanks which were scrapped) were closed and the lines plugged with plastic stops which were screwed into the ends of the piping (the plastic stops or plugs apparently should not have been used)

6. Two years later, in June of 1987, one of the plastic plugs stopping the end of a discontinued pipe came loose (and for some reason the valve leading to that pipe was open) and gasoline spilled all over. The spill was exacerbated by the fact that Imperial Oil had not constructed a berm or containment dike (because the storage tank system at Souris had been built prior to 1976, when the gasoline regulations were made, it was not required to have a containment dike).

7. In any event, following the spill, a number of Environmental Officers attended at the scene and investigated. The upshot of the investigation was that Imperial Oil was charged with operating the Souris storage tank system without having registered it pursuant to the regulations.

8. Esso pleaded guilty

Legislative Provisions

1. Manitoba Clean Environment Act (not unlike a lot of environmental legislation)

   Any person who contravenes or violates the Act or the Regulations is guilty of an offence and is liable on summary conviction

   (a) in the case of an individual, to a fine not exceeding $5,000; and

   (b) in the case of a corporation, to a fine not exceeding $50,000.

2. Manitoba Summary Convictions Act empowers the Court in appropriate cases (NWS fines provided for in the legisl.) to simply reprimand the accused.

Esso argued in favour of a reprimand:

Three arguments:

(1) The failure to register was a mere technical breach of the Act/Regs

(2) That Esso was confused or was in doubt about the meaning and effect of the Regs (remember, Esso had registered its storage tank system in the first instance)

The Crown argued

p. 100

Hazardous Waste Management: Minimizing and Avoiding Liabilities

by Brian O'Ferrall

Bennett Jones Verchere, Calgary, Alberta

"Hazardous wastes" are defined in Alberta as hazardous chemicals which have been disposed of or are about to be disposed of as waste.[1] Hazardous chemicals are broadly defined as meaning any substance which may constitute a danger to the environment, plant or animal life or human health.[2] The Alberta Hazardous Chemicals Act then goes on to give Cabinet (the Lieutenant Governor in Council) the power to make regulations exempting hazardous chemicals from any or all of the provisions of the Act or the regulations thereunder.[3] And in Alberta, the Lieutenant Governor in Council has exercised that power in a curious way in the Hazardous Waste Regulation (Alta. Reg. 505/87):

> "2. The following hazardous chemicals are exempt from the Act and this Regulation if they are disposed of as waste.
>
> (a) those wastes that are not listed in Table 1 of the Schedule or defined by the criteria specified in Table 1 (i.e., only those wastes not included in the list of 3000 or so chemicals listed in the federal Transportation of Dangerous Goods Act regulations);
>
> (b) household wastes;
>
> (c) agricultural wastes generated by
>
> (i) the growing and harvesting of agricultural crops, or
>
> (ii) the raising of animals, including animal manures returned to the soil as fertilizers;
>
> (d) mining overburden returned to a mine site as approved pursuant to the Land Surface Conservation and Reclamation Act and the regulations under that Act;
>
> (e) fly ash waste, bottom ash waste, slag waste or flue gas emission control waste generated from the combustion of domestic waste, coal, or other fossil fuels as approved pursuant to the Clean Air Act or the Clean Water Act and the regulations under those Acts;
>
> (f) drilling fluids, produced waters, oily waste, fracture fluids, reformates, completion fluids, process and runoff waters, spent iron sponge or similar sweeteners and waste treater hay resulting from the exploration, development or production of

---

[1] Section 1(g) of the Hazardous Chemicals Act (R.S.A. D80 c.H-3)

[2] Section 1(f) of the Hazardous Chemicals Act

[3] Section 16(i) of the Hazardous Chemicals Act

crude oil or natural gas approved pursuant to the Oil and Gas Conservation Act and the regulations under that Act, the Oil Sands Conservation Act and regulations under that Act or the Pipeline Act and regulations under that Act;

(g) irrigation return flows approved pursuant to the Water Resources Act and the regulations under that Act;

(h) domestic sewage;

(i) any materials that are for recycling, reuse or reprocessing in facilities approved pursuant to the Clean Water Act or the Clean Air Act and the regulations under those Acts;

(j) point source discharges licensed pursuant to the Clean Water Act or the Clean Air Act and the regulations under those Acts;

(k) agricultural chemicals and their empty containers approved pursuant to the Agricultural Chemicals Act and the regulations under that Act;

(l) any hazardous waste, except for those containing chemicals listed in Table 2 of the Schedule, produced by a generator in an amount less than 5 kilograms if a solid, or 5 liters if a liquid, per month."

The hazardous wastes which are listed in Table 1 of the Schedule and which therefore are not exempted from the Hazardous Chemicals Act or the regulations thereunder are as follows:

TABLE 1

"1. Hazardous wastes listed in this Table consist of:

(a) the goods, substances, and waste streams listed in List II of Schedule II in the English version of the Transportation of Dangerous Goods Regulations (SOR 85-77) under the Transportation of Dangerous Goods Act (Canada), except for those goods or substances which have the numeral "37" appearing in column IV of that list (List II or Schedule II contains a list of roughly three thousand "dangerous goods" other than explosives. Those goods excepted include oily rags, fridges, scrap rubber, textile wastes, wool wastes, paper, straw or hay, fish meal or fish scrap, animal or vegetable fibres, cotton and charcoal);

(b) any container, other than an empty container, that is larger than 5 liters in capacity, and that was used to hold any goods, substances or waste streams referred to in clause (a), except for those products or substances listed in Table 2;

(c) any unrinsed empty container larger than 5 liters in capacity that was used to hold any product or substance listed in Table 2. (Table 2, which has been appended to this paper as Appendix I, contains a long list of chemicals which make unrinsed empty containers hazardous waste);

2. Hazardous wastes defined by criteria in this Table are the following:

(a) any mixture or solution described by Classes 2 to 9 of section 3 in the English version of the Transportation of Dangerous Goods Regulation (SOR 85-77) made under the federal Transportation of Dangerous Goods Act (i.e.,. gases, flammable liquids, flammable solids, oxidizing substances and organic peroxides, poisonous and infectious substances, radioactive materials, corrosives and other miscellaneous products and substances).

(b) any mixture or solution which contains 0.01 percent by mass or greater of any of the substances listed in section 1(a) with the numerals "9.2" appearing in Column III of the list referred to in section 1(a)."

What a regulatory nightmare! After the Act defines a hazardous waste to include almost anything which is capable of entering the environment in quantities or concentrations or under conditions which might constitute a danger to the environment, plant or animal life or human health, and after the Regulations make most of the three thousand "dangerous goods" listed in the federal Transportation of Dangerous Goods Regulations subject to the provisions of the provincial Hazardous Chemicals Act, Sections 2(b) to (l) of the Regulation goes on to exempt a whole raft of substances which could be hazardous to human health, plant or animal life or the environment, including household wastes, agricultural wastes, agricultural chemicals, mining overburden, waste generated by combustion of fossil fuels, wastes generated by oil and gas exploration and development, irrigation wastes, domestic sewage, point source discharges licensed under the Clear Air Act and the Clean Water Act, any materials which are being recycled in facilities licensed under the Clear Air Act and the Clean Water Act and any hazardous wastes in amounts less than five liters or five kilograms except for a long list of chemicals which make their unrinsed chemical containers hazardous waste.

Conflicts, duplications, and inconsistencies abound for the waste generator, treater, transporter or disposer. Cases involving definitions of "waste" which illustrate the problem are as follows:

(a) Finlay Forest Industries Ltd. v. The Queen (1988) 2 C.E.L.R. 279, B.C. County Court;

(b) R. v. St. Michael's Hospital and Wellesley Hospital (1987) 2 C.E.L.R. 327, Ontario District Court

So how does one avoid or minimize liability?

1. Firstly, one should know what one's liabilities are. Liabilities in law arise out of statute and/or the common law.

As far as statutory liabilities are concerned, unlike other areas of law, it is not that easy to ascertain what one's statutory liabilities are, let alone what they are likely to be in an ever-changing legislative and regulatory regime.

We pride ourselves on being governed by the rule of law rather than the rule of man; but in the case of hazardous wastes the rule of law has degenerated into a complex legislative dictatorship where the only certainty is that if you do anything at all, you may have violated a statute or regulation. The regulatory regime might be analogized to the proverbial South American dictatorship where not only is there a rapid succession of different dictators but also each dictator during his brief term in office changes his mind on a daily basis as to what he expects from the populace. R. v. Imperial Oil Ltd. (1990) 4 C.E.L.R. 98, a recent Manitoba Provincial Court prosecution, is an example of the confusion which exists with respect to the import of environmental legislation and regulation, even within sophisticated corporations such as Imperial Oil.

This paper therefore can do no more than point out potentially relevant federal and provincial legislation, regulation and guidelines and invite the reader to fend for himself (or find a good environmental lawyer). The following list was prepared by a colleague of mine over at the Fenerty, Robertson, Fraser & Hatch firm in Calgary, Richard Neufeld. It is contained in Environmental Law for Practitioners, Vol. 2, published by the Canadian Institute of Resources Law at the University of Calgary. I have had occasion to make use of this list and have added to it.

PROVINCIAL LEGISLATION

British Columbia

Waste Management Act (S.B.C. 1982, c. 41, as amended)
    Waste Management Regulation (B.C. Reg. 432/82, as amended)
    Special Waste Regulation (B.C. Reg. 63/88)
    Waste Management Permit Fees Regulation (B.C. Reg. 304/87)

Environment Management Act (S.B.C. 1982, c. 14, as amended)
    Environment Impact Assessment Regulation (O.C. 1752/81)
    Environment Appeal Board Procedure Regulation (B.C. Reg. 1/82, as amended)

Pesticide Control Act (R.S.B.C. 1979, c. 32, as amended)
  Pesticide Control Regulation (B.C. Reg. 319/81, as amended)

Health Act (R.S.B.C. 1979, c. 161, as amended)

Transport of Dangerous Goods Act (S.B.C. 1985, c. 17)
  Transport of Dangerous Goods Regulation (B.C. Reg. 203/85)

Alberta

Agricultural Chemicals Act (R.S.A. 1980, c. A-6, as amended)
  Pesticides Sales, Use and Handling Regulations (Alta. Reg. 213/80, as amended)

Clean Air Act (R.S.A. 1980, c. C-12, as amended)

Clean Water Act (R.S.A. 1980, c. C-13, as amended)

Department of Environment Act (R.S.A. 1980, c. D-19, as amended)

Energy Resources Conservation Act (R.S.A. 1980, c. E-11 as amended)

Fire Prevention Act (R.S.A 1980, c. F-10.1)
  Alberta Fire Code (Alta. Reg. 151/84 and 135/88) - tank storage of flammable and combustible liquids

Hazardous Chemicals Act (R.S.A 1980, c. H-3, as amended)
  Hazardous Waste Regulation (Alta. Reg. 505/87)

Oil and Gas Conservation Act (R.S.A. 1980, c. 0-5, as amended)
  Oil and Gas Conservation Regulations (Alta. Reg. 151/71, as amended)

ERCB Interim Directives on Informational Letters dealing with waste and/or wastework disposal
  Sump Fluid Disposal Requirements (ID-OG 75-2)
  Subsurface Water Disposal Schemes (IL-OG 77-4)
  Subsurface Disposal of Drilling Fluids (ID 81-1)
  Disposal of Campsite and Wellsite Waste (IL 81-10)
  Disposal of Oilfield Waste (IL 83-10)
  Storage, Handling and Disposal of Oily Wastes (IL 86-16)

Oil Sands Conservation Act (R.S.A. 1983, c. 05.5)
  Oil Sands Conversation Regulation (Alta. Reg. 76/88)

Public Health Act (SA 1984, c. P27.1, as amended)
  Waste Management Regulation (Alta. Reg. 250/85)

Special Waste Management Corporation Act (R.S.A. 1982, c. S-21.5, as amended)

Transportation of Dangerous Goods Control Act (R.S.A 1982, c. T-6.5)
  Administration Regulation (Alta. Reg. 37/86)
  Transportation of Dangerous Goods Control Regulation (Alta. Reg. 383/85)

Saskatchewan

Dangerous Goods Transportation Act (S.S. 1984-85, c. D-1.2)
  Dangerous Goods Transportation Regulations (R.R.S., c. D-1.2, Reg. 1, as amended)

Department of the Environment, 1984 (S.S. 1983-4, c. D-14.1)

Environmental Management and Protection Act (S.S. 1983-84, c. E-10.2, as amended)
    Environmental Spill Control Regulations (R.R.S. 1981, c. D-14, Reg. 1, as amended)
    Municipal Refuse Management Regulations (R.R.S., c. E-10.2, Reg. 4)
    Water Pollution Control and Waterworks Regulations (R.R.S., c. E-10.2, Reg. 2)

Environmental Assessment Act (S.S. 1979-80, c. E-10.1, as amended)

Mineral Resources Act, 1985 (S.S. 1984-85, C. M-16.1)
    Pollution Prevention Regulations for the Mineral Industry (Sask. Reg. 317/69, as amended)

Pest Control Products (Saskatchewan) Act (SS. 1979-80, c. P-8, as amended)
    Pest Control Products Regulations (R.R.S. 1984, c. P-8, Reg. 2)

Public Health Act (R.S.S. 1978, c. P-37, as amended)
    Waste Management Regulations (Sask. Reg. 198/72, as amended)

Vehicles Act, 1983 (Repealed 1986, c. 33, s. 29)
    PCB Transportation Regulations (R.R.S. c. V-3, Reg. 26, Repealed by SR 111/86)

Manitoba

Environment Act (S.M. 1987-88, c. 26)
    Classes of Development Regulation (Man. Reg. 164/88)
    Hazardous Materials Designation Regulation (Man. Reg. 15/81
    Incinerators Regulation (Man. Reg. 91/88 R)
    Licensing Procedures Regulations (Man. Reg. 163/88)
    Pesticides Regulation (Man. Reg. 94/88 R)
    Storage and Handling of Gasoline and Associated Products Regulation (Man. Reg. 97/88 R)
    Waste Disposal Grounds Regulations (Man. Reg. 98/88 R)

Dangerous Goods Handling and Transportation Act (S.M., c. D-12, as amended)
    Classification Criteria for products, Substances and Organisms Regulation (Man. Reg. 282/87)
    Environmental Accident Reporting Regulation (Man. Reg. 439/87)
    Federal Regulations Adoption Regulation (Man. Reg. 172/85, as amended)
    Generator Registration and Carrier Licensing Regulation (Man. Reg. 175/87, as amended)
    Manifest Regulation (Man. Reg. 139/88)

High-Level Radioactive Waste Act, (R.S.M. 1987, c. 28)

Manitoba Hazardous Waste Management Corporation Act (S.M. 1986, c. 10, as amended)

Pesticides and Fertilizers Control Act (C.C.S.M., c. P40, as amended)

Public Health Act (R.S.M. 1970, c. P210, as amended)
    Collection and Disposal of Wastes Regulation (Man. Reg. 321/88 R)

Protection of Water Sources Regulation (Man. Reg. 326/88 R)
Sanitation Regulation (R.R.M. 1971, P210-R3, as amended)

Ontario

Consolidated Hearings Act (S.O. 1981, c. 20)
  General Regulation (O. Reg. 688/81, as amended)

Dangerous Goods Transportation Act, 1981 (S.O. 1981, c. 69)
  General Regulation (O. Reg. 363/85)

Environmental Assessment Act (R.S.O. 1980, c. 140)
  General Regulation (O. Reg. 205/87, as amended)

Environmental Protection Act (R.S.O. 1980, c. 141, as amended)
  Air Pollution Control (General) Regulation (R.R.O. 1980, Reg. 308, as amended)
  Deep Well Disposal Regulation (R.R.O. 19980, Reg. 303, as amended)
  Effluent Monitoring - General (O. Reg. 358/88)
  Effluent Monitoring - Petroleum Refining Sector (O. Reg. 359/88)
  Hauled Liquid Industrial Waste Disposal Sites (O. Reg. 808/81, as amended)
  Mobile PCB Destruction Facilities Regulation (O. Reg. 148/86, as amended)
  Sewage Systems Regulation (O. Reg. 374/81, as amended)
  Spills Regulation (O. Reg. 618/85)
  Waste Management - General Regulation (O. Reg. 309, as amended)
  Waste Management - PCBs Regulation (O. Reg. 11/12, as amended)

Gasoline Handling Act R.S.O. 1980, c. 185, as amended)
  Gasoline Handling Code (R.R.O. 1980, Reg. 439)

Ontario Water Resources Act (R.S.O. 1980, c. 361, as amended)

Ontario Waste Management Corporation Act (S.O. 1981, c. 21)

Pesticides Act (R.S.O. 1980, c. 376, as amended)
  Pesticides (General) Regulations (R.R.O. 1980, Reg. 751, as amended)

Quebec

Environment Quality Act (R.S.Q. 1977, c. Q-2, as amended)
  Environmental Impact Assessment and Review Regulation (R.R.Q. 1981, c. Q-2, r.9, as amended)
  Environmental Impact Assessment and Review Applicable to a Part of the Northeastern Quebec Region (R.R.Q. 1981, c. Q-2, r. 10)
  Environmental and Social Impact Assessment and Review Procedure Applicable to the Territory of James Bay and Northern Quebec (R.R.Q. 1981, c. Q-2, r.11)
  Hazardous Waste Regulation (Q.C. 1000-85, as amended)
  Quality of the Atmosphere Regulation (R.R.Q. 1981, c. Q-2, r. 20, as amended)
  Solid Waste Regulation (R.R.Q. 1981, c. Q-2, r. 14, as amended)

Ministere de L'Environment Act (S.Q. 1979, c. 49, as amended)

Highway Safety Code (S.Q. 1986, c. 91)
    Transport of Dangerous Substance Regulation (O.C. 29,86, as amended)

Pesticides Act (S.Q.1987, c. 29)
    Pesticides Regulation (O.C. 874-88)

Transport Act (R.S.Q. 1977, c. T-12, as amended)
    Transport of Waste Regulation (R.R.Q. 1981, c. T-12, r. 16)

New Brunswick

Clean Environmental Act (R.S.N.B. 1973, c. C-6, as amended)
    Appeal Regulation (N.B. Reg. 84-179)
    Environmental Impact Assessment Regulation (N.B. Reg. 87-83)
    Petroleum Product Storage and Handling Regulation (N.B. Reg. 87-97, as amended)
    Water Quality Regulation (N.B. Reg. 82-126, as amended)

Health Act (R.S.N.B. 1973, c. H-2, as amended)
    Health Act Regulation (66-43, as amended)

Pesticides Control Act (R.S.N.B. 1973, c. P-8, as amended)
    Pesticides Control Act General Regulation (N.B. Reg. 83-57)

Transportation of Dangerous Goods Act (S.N.B. 1988, c. T-11.01)

Nova Scotia

Dangerous Goods and Hazardous Wastes Management Act (S.N.S 1986, c. 7, as amended)
    Petroleum Storage Regulations (N.S. Reg. 33/88)

Dangerous Goods Transportation Act (S.N.S. 1982, c.5)
    General Regulations (N.S. Reg. 152/85, as amended)

Environmental Assessment Act (S.N.S. 1988, c. 11, not proclaimed)

Environmental Protection Act (S.N.S. 19873, c. 6, as amended)

Pest Control Products (Nova Scotia) Act (S.N.S. 1986, c. 16, as amended)
    Pest Control Products Regulations (N.S. Reg. 191/87)

Water Act (R.S.N.S. 1972, c. 58, as amended)

Prince Edward Island

Dangerous Goods (Transportation) Act (S.P.E.I. 1981, c. 9)
    Dangerous Goods (Transportation) Act Regulations (P.E.I. Reg. EC319/85)

Environmental Protection Act (S.P.E.I. 1975, c. 9, as amended)
  Petroleum Storage Tanks Regulations (P.E.I. Reg. EC435/86)
  Sewage Disposal Regulations (P.E.I. Reg. EC542/87)

Pesticides Control Act (S.P.E.I. 1984, c. 29)
  Pesticide Control Regulations (P.E.I. Reg. EC543/84)

Water and Sewerage Act (R.S.P.E.I. 1974, c. W-2, as amended)
  Municipal Sewerage Utilities, General Rules and Regulations (Ont. 1987)

Newfoundland

Dangerous Goods Transportation Act (S.N. 1982, c. 45)
  Dangerous Goods Transportation Regulations (Nfld. Reg. 305/85)

Department of Environment Act (S.N. 1981, c. 10, as amended)
  Environmental Control (Water and Sewage) Regulations (Nfld. Reg. 156/80)
  Storage and Handling of Gasoline and Associated Products Regulations (Nfld. Reg. 258/82, as amended)

Department of Health Act (R.S.N. 1970, c. 83, as amended)

Environmental Assessment Act (S.N. 1980, c. 3, as amended)
  Environmental Assessment Regulations (Nfld. Reg. 225/84)

Pesticides Control Act, 1983 (S.N. 1983, c. 52)
  Pesticides Control Regulations (Nfld., Reg. 86/84)

Waste Material (Disposal) Act (S.N. 1973, No. 82, as amended)
  Storage PCB Wastes Regulations (Nfld. Reg. 230/88)

The jurisprudence with respect to compliance with environmental statutes, regulations and orders-in-council has revolved around three dams in Western Canada (as well as the opening up of a sensitive highway during the 1988 Olympics). The principles enunciated, of course, apply as much to waste management legislation as they do to other federal and provincial environmental legislation.

Statutory/Regulatory Compliance Cases

1. Friends of the Oldman River Society v. Alberta (Minister of the Environment), (1987) 2 C.E.L.R. 234 Alta. Q.B., Moore C.J.Q.B.

   All the licenses and permits issued to Alberta Environment under the Water Resources Act for the Oldman River Dam for failure to give certain notices.

2. Alberta Wilderness Association v. Alberta (Minister of the Environment) 1988 Q.B. - Calgary (Action No. 8701-18938/20862) Medhurst J.

   There was refusal to quash a Ministerial Order opening up the Kananaski highway from December 1, 1987 to February 29, 1988 for the 1988 Winter Olympics in Calgary.

3. Friends of the Oldman River v. the Alberta Energy Resources Conservation Board (1988) 89 A.R. 280 Alta. C.A., Harradence J.A.

There was a refusal to grant leave to appeal a decision of the Energy Resources Conservation Board refusing to conduct a public hearing into the hydroelectric aspects of the Oldman River Dam pursuant to the Hydro and Electric Energy Act.

4. Friends of the Oldman River v. Alberta (Minister of the Environment) (1988) 89 A.R. 339; (1988) 4 C.E.L.R. 129, Alta. Q.B., Picard J.

   There was a refusal to quash the decision of the Controller of Water Resources to issue an interim license to Alberta Environment to impound water and to waive the requirement for giving public notice of the application for the interim license.

5. Assn. of Stop Construction of Rafferty Alameda Projects Inc. v. Saskatchewan (Minister of Environment & Public Safety) (1988) 3 C.E.L.R. 236, Sask. Q.B., Scheibel J.

   The plaintiff filed a Statement of Claim alleging that the application to construct a dam on the Souris River filed with the Minister of the Environment did not comply with the requirements of the Saskatchewan Environmental Assessment Act. The defendants brought applications for orders striking out the Statement of Claim on numerous grounds. That application was dismissed and the Statement of Claim allowed to stand.

6. Cdn. Wildlife Federation Inc. v. Canada (Minister of the Environment) (1989) 3 C.E.L.R. 287 Fed. Ct., Cullen J.

   In order for mandamus requiring the federal Minister of the Environment to comply with the Environmental Assessment and Review Process Guidelines Order in connection with the Rafferty and Alameda dams on the Souris river system was granted.

7. Saskatchewan Water Corporation v. Cdn. Wildlife Federation Inc. et al (1989) 4 C.E.L.R. 1 Fed. Ct. App. Div.

   The Federal Court of Appeal upholds Cullen J. and affirms that the federal Minister of the Environment was required to comply with the Environmental Assessment and Review Process Guidelines Order (EARPGO) before issuing a license under the International Rivers Improvements Act.

8. Friends of the Oldman River Society v. Canada (Minister of Transport) et al (1989) 4 C.E.L.R. 137 Fed. Ct. Jerome A.C.J.

   The Federal Court dismissed applications for an order quashing approval of the Minister of Transport pursuant to the Navigable Waters Protection Act to construct a dam on the Oldman River and for a writ of mandamus directing the Minister of Transport to comply with the Environmental Assessment and Review Process Guidelines Order.

9. Cdn. Wildlife Federation Inc. v. Canada (Minister of the Environment) (1989) 4 C.E.L.R. 201 Fed. Ct., Muldoon J.

   The court orders the second license issued to the Saskatchewan Water Corporation for the works and undertakings of the Rafferty-Alameda Dams project quashed unless the federal Minister of the Environment appointed an environmental assessment panel pursuant to the EARP guidelines by January 30, 1990.

10. Friends of the Oldman River v. Canada (Minister of Transport) and Alberta (Minister of Public Works) (1990) 2 F.C. 18; Fed. C.A.

The federal Court of Appeal allows an appeal from the decision of Jerome A.C.J. and quashes the approval granted by the Minister of Transport to Alberta Environment to construct the Oldman River Dam pursuant to the Navigable Waters Act and grants orders of mandamus directing the Minister of Transport and the Minister of Fisheries and Oceans to comply with the EARP Guidelines and Order.

The Oldman River Dam case has gone to the Supreme Court of Canada. However, for an analysis of the federal court decisions I would recommend the article by Marie-Ann Bowden, Associate Professor of Law, University of Saskatchewan, at Saskatoon entitled "Damning the Opposition; EARP in the Federal Court" (1990) 4 C.E.L.R. 227.

2. Another way to avoid liabilities in waste management is to pick your sites wisely.

Judicious site selection requires not only that the site of the proposed waste treatment, storage or disposal activities be physically and geographically well-suited to the type of activity which is proposed to be conducted at that site, but also that the site be politically and socially acceptable to not only the people living in the area who are directly impacted but also to a wider public which may perceive that they are affected.

Some guidance may be found in the experience of others and in this regard the following articles or studies may be useful:

(a) The Dalcor Group, "Ownership and Control Options for Hazardous Waste Management in Alberta - A Study Done for Hazardous Waste Management Committee on Behalf of the Minister of the Environment" January 1980.

(b) Condron, M.M. and Sipher, D.L., wrote "Hazardous Waste Facility Siting: A National Survey Legislative Commission on Toxic Substances and Hazardous Wastes" 1987, Albany, New York.

(c) McQuade-Cook, J. and Simpson, K.J. "Siting a Fully Integrated Waste Management Facility in Alberta" 1987, Journal of the Air Pollution Association, Volume 36, No. 9.

Further guidance may be found in the reported cases of litigation involving the selection of waste management sites.

1. The Bedford Service Commission v. A.G. (Nova Scotia) and the Halifax-Dartmouth Regional Authority (1977) 2 S.C.R. 269; (1977) 72 D.L.R. 639; on appeal from the Supreme Court of Nova Scotia to the Supreme Court of Canada.

2. The Town of Milton et al and Ontario Waste Management Corp. et al (1985) 50 O.R. (2d) 715, Ontario High Court.

3. City of Calgary and Genstar Corporation v. Public Health Advisory and Appeal Board et al (1986) 1 C.E.L.R. 62, Alta. Q.B. O'Leary J.

4. Waste Not Wanted Inc. v. Canada (1987) 2 C.E.L.R. 24, Fed. Ct.

5. Re: Boise Cascade Canada Ltd. (1987) 2 C.E.L.R. 66, Ontario Environmental Assessment Board.

6. Re: Village of Cache Creek Landfill (1987) 2 C.E.L.R. 289, B.C. Environmental Appeal Board.

7. NSP Investments Ltd., Town of Milton, Milton Area Citizens' Coalition v. Ontario et al (1990) 4 C.E.L.R. 279, Ontario Divisional Court.

3. Another way of avoiding environmental liability is to attempt to contract out of it or shift it to another. This is only possible, however, when there is a sale or transfer of hazardous chemicals or hazardous wastes to another or where there is a sale of assets of or shares in a hazardous waste business or a sale of toxic real estate. Nevertheless, it is important to be aware of the opportunities for avoiding or minimizing environmental liabilities in such circumstances.

The means by which liability may be avoided or minimized include environmental representations and warranties and environmental indemnities.

What one wishes to obtain from the other side, in a business transaction, is a representation and warranty that the other side has done nothing and knows of nothing which has been done to harm the environment and just in case the other side's representation and warranty proves to be inaccurate, one seeks an indemnification from the other side whereby the other side holds one harmless from and against all costs and expenses arising out of any environmental claims which might be advanced.

The following are samples of representations and warranties and environmental indemnifications which might be adapted to specific purchase and sale and/or lending transactions. In order to simplify the "legalese" which ordinarily appears in these type of clauses, I have defined the parties as the "good guys" and the "other side". We all consider ourselves "good guys"; it's the "other side" we have concerns about.

(a) Representations and Warranties:

The "other side" represents and warrants that:

(i) The other side possesses all licences, permits and other governmental approvals and authorizations necessary for the operation of the business as it is presently being conducted. Further, the other side does not need nor is it subject to any approval, consent, direction or order of any court or governmental authority, including the Department of the Environment respecting the installation or operation of any machinery, equipment or facility constituting the assets of the business; and the other side is not aware of any circumstances which might give rise to any such order, certificate, approval, consent or direction which may affect the business;

(ii) No violations of the licences, permits and other governmental approvals and authorizations referred to in paragraph (1) above have occurred or have been recorded. No proceeding is pending or threatened which could result in the revocation or limitation thereof. The other side has not received any notices to the effect that its operations or assets are not in full compliance with all applicable laws, regulations, whether Federal, Provincial or Municipal. The other side is in substantial compliance with all Federal, Provincial and Municipal laws, rules, regulations, ordinances, standards and all other similar laws and regulations including, without limitation, civil rights, occupational health and safety, work place hazardous materials information requirements and construction codes;

(iii) The other side has received no notice, and does not now have reasonable ground to know, of Federal, Provincial or Municipal remedial or control actions or orders, or of any investigation or evaluation as to whether any remedial action is needed to respond to a release or threatened release of any contaminant or other hazardous or toxic substance into the environment. There are no civil, criminal or administrative actions, claims, suits, hearings, prosecutions or proceedings pending, threatened or contingent with respect to any law, regulation, code, order, injunction, demand or actual release or spill of any contaminant into the environment;

(iv) The other side has not filed any notices under any federal, provincial or municipal law or regulation, either indicating past or present treatment, storage, or disposal of hazardous waste or reporting spills or releases of any contaminant or other hazardous or toxic substance into the environment. The other side has never defaulted in reporting to the proper governmental authority any spill or release of any contaminant or hazardous or toxic substance into the environment. The other side has complied with all laws, regulations, or orders to report such an occurrence, and further, has disclosed, with full detail, all such reporting to the good guys;

(v) The other side does not generate, transport, treat or dispose of hazardous wastes as defined by any Canadian federal, provincial or municipal law. The other side has not caused or permitted, and has no knowledge of the release or spill of any contaminant or hazardous or toxic substance on or off-site or properties or facilities owned or operated by third parties but with respect to which the other side is alleged to have liability;

(vi) The other side has disposed of, treated or stored on or off-site of real property occupied by it, all hazardous wastes and other substances in substantial compliance with all laws, regulations and orders. All pollution control equipment operated as part of the company's business is effective in meeting applicable emission limits and effluent safety standards;

(vii) The other side has not used the property which it occupied as a land fill, waste storage or disposal site, deep wells, tanks or other similar storage or disposal. Neither has the other side deposited or buried or otherwise disposed of waste on such properties. The other side has not received any notice that it is potentially a responsible party for a federal, provincial, municipal or local cleanup or corrective action under any environmental law, regulation or order. The other side has not received any written request for information in connection with any federal, provincial, municipal or local inquiries as to disposal sites or otherwise;

(viii) The other side has retained all environmental operating documents and records substantially in the manner and for the time period required by all applicable laws, regulations or orders; and/or

(ix) The other side has fully disclosed in writing to the purchaser all material facts which could lead to prosecutions, claims, administrative orders or injunctions.

(b) Environmental Indemnification:

The other side shall indemnify and hold the good guys harmless from and against any and all actual and consequential damages, liabilities, judgments, settlements, costs and expenses of any nature whatsoever, including reasonable legal and expert fees, resulting from or arising out of:

(i) the other side's or any corporate predecessor's failure to obtain, on or prior to the closing date, any permits, licences, registrations and other authorizations which are required under applicable environmental laws;

(ii) the other side's or any corporate predecessor's conflict with or default in or violation of, on or prior to the closing date, of any terms and conditions of any required permits, licences, registrations and other authorizations;

(iii) the other side's or any corporate predecessor's conflict with or default in or violation of or non-compliance with, on or prior to the closing date, of any environmental law;

(iv) events or conditions in existence or occurring on or prior to the closing date which thereafter give rise to any obligation or liability under any environmental law or any related common law theory, including but not limited to responsibility for any cleanup or liability for cleanup costs, personal injury or property damage.

For the purposes of this clause, environmental laws means any Canadian Federal, Provincial or local statute, code, ordinances, rule, regulation, permit, consent, approval, licence, judgment, order, writ, decree, injunction or other authorization or mandate (each of the above in existence on the closing date) relating to:

(i) Emissions, discharges, releases or threatened releases of pollutants, contaminants, or hazardous or toxic materials or wastes into ambient air, surface water, ground water, publicly owned sewage treatment works, sewerage systems or land;

(ii) The use, treatment, storage, disposal, handling, manufacturing, sale, transportation, or shipment of any hazardous or toxic waste, material, substances, products or by-products as defined under any Federal, Provincial or local statute, code, ordinances, rule, regulation, permit, consent, approval, licence, judgment, order, writ, decree, injunction or other authorization or mandate, including but not limited to any obligations arising and any orders or directions issued pursuant to the Canadian Environmental Protection Act and regulations thereunder, the Federal and Provincial Transportation of Dangerous Goods Acts and regulations thereunder; the Alberta Hazardous Chemicals Act and any other Canadian Provincial legislation of an equivalent nature in effect on the closing date;

(iii) Otherwise relating to the pollution or protection of health or environment.

(c) Third Party Claims:

If a claim by a third party is made against the good guys and if the good guys intend to seek indemnity with respect thereto under this clause, the good guys shall promptly notify the other side of such claim. The other side shall have 30 days after receipt of such notice to undertake, conduct and control, through counsel of its choosing and its expense, the settlement or defence thereof and the good guys shall co-operate with the other side in connection therewith; provided that:

(i) The other side shall permit the good guys to participate in such settlement or defence through counsel chosen by the good guys, provided that the fees and expenses of such counsel shall be borne by the good guys;

(ii) The other side shall promptly reimburse the good guys for the full amount of any losses resulting from such claim;

(ii) So long as the other side is reasonably contesting any such claim in good faith and on a timely basis, the good guys shall not pay or settle any such claim. Notwithstanding the foregoing, the good guys shall have the right to pay or settle any such claim, provided that in such event they shall waive any right to indemnity therefor by the other side;

(iv) If the other side does not notify the good guys within 30 days after the receipt of the good guys's notice of a claim of indemnity hereunder that the other side shall elects to undertake the defence thereof, the good guys shall have the right to contest, settle or compromise such claim in the exercise of its reasonable judgment at the expense of the other side;

3. Another obvious way of minimizing or avoiding environmental liability is through environmental impairment insurance. Attached hereto as Appendix II to this paper is a copy of not only an environmental impairment liability policy but also a comprehensive general liability policy with a total pollution exclusion. In many circumstances, those who conduct environmentally risky businesses require both.

FEDERAL LEGISLATION

Arctic Waters Pollution Prevention Act (R.S.C. 1985, c. A-12, as amended)
    Arctic Shipping Pollution Prevention Regulations (C.R.C. 1978, c. 353, as amended)
    Arctic Water Pollution Prevention Regulations (C.R.C. 1978, c.354, as amended)

Atomic Energy Control Act (R.S.C. 1985, c.A-16)
    Transport Packaging of Radioactive Materials & Regulations (SOR/83-740)

Canadian Environmental Protection Act (S.C. 1988, c. 22, as amended)
    Chlorobiphenyl Regulations No. 1 (C.R.C. 1978, c. 564 as amended)
    Chlorobiphenyl Regulations No. 2 (Product) (SOR/8-406)
    Chlorobiphenyl Regulations No. 3 (Release) (SOR/85-407)
    Ocean Dumping Control Regulations (C.R.C. 1978, c. 1243)

Canada Shipping Act (R.S.C. 1985, c. S-9, as amended)
    Garbage Pollution Prevention Regulations (C.R.C. 1978, c. 1424)
    Great Lakes Sewage Pollution Prevention Regulations (CJLC 1978, c. 1429, as amended)
    Maritime Pollution Claims Fund Regulations (C.R.C. 1978, c. 1444)
    Oil Pollution Prevention Regulations (C.R.C. 1978, 1454, as amended)
    Pollutant Sub Regulations (C.R.C. 1978, c. 1458)

Fisheries Act (R.S.C. 1985, c. F-14, as amended)
    Chlor-Alkali Mercury Liquid Effluent Regulations (C.R.C. 1978, c.811)
    Meat and Poultry Products Plant Liquid Effluent Regulations (C.R.C. 1978, c. 818)
    Metal Mining Liquid Effluent Regulations (C.R.C. 1978, c. 819)
    Petroleum Refining Liquid Effluent Regulations (C.R.C. 1978, c. 828)
    Potato Processing Plant Liquid Effluent Regulations (C.R.C. 1978, c. 829)
    Pulp and Paper Liquid Effluent Regulations (C.R.C. 1978, c. 830)

Government Organization Act, 1970 (R.S.C. 1970, c. 14, as amended)

Hazardous Materials Information Review Act (S.C. 1987, c. 30, as amended)

Hazardous Products Act (R.S.C. 1970, c. H-3, as amended)
    Controlled Products Regulations (SOR/88-66)
    Hazardous Materials Information Review Regulations (SOR/88-456, as amended)
    Ingredient Disclosure List (SOR/88-64)

Oil and Gas Production and Conservation Act (R.S.C. 1985, c. 0-7, as amended)
    Oil and Gas Spills and Debris Liability Regulations (SOR/87-331)

Pest Control Products Act (R.S.C. 1985, c. P-9, as amended)
    Pest Control Products Regulations (C.R.C. 1978, c. 1253, as amended)

Transportation of Dangerous Goods Act (R.S.C. 1984, c. T-19)
    Transportation of Dangerous Goods Regulations (SOR/85-77, as amended)

APPENDIX I

TABLE 2 of the Alberta Hazardous Waste Regulation

CHEMICALS THAT MAKE UNRINSED EMPTY CONTAINERS HAZARDOUS WASTE

Substance

Acetaldehyde, chloro-
Acetamide, N-(aminothioxomethyl)-
Acetamide 2-fluoro-
Acetic acid, fluoro-, sodium salt
Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, methyl ester
3-(alpha-Acetonylbenzyl)-4-hydroxycoumarin and salts, when present at concentrations greater than 0.3%
1-Acetyl-2-thiourea
Acrolein
Aldicarb
Aldrin
Allyl alcohol
Aluminum phosphide
5-(Aminomethyl)-3-isoxazolol
4-aAminopyridine
Ammonium picrate
Ammonium vanadate
Arsenic acid
Arsenic (III) oxide
Arsenic (V) oxide
Arsenic pentoxide
Arsenic trioxide
Arsine, diethyl-
Aziridine
Barium cyanide
Benzenamine, 4-chloro-
Benzenamine, 4-nitro-
Benzene, (Chloromethyl)-

Substance

1,2 Benzenediol, 4-[1-hydroxy-2-(methylaminio)ethyl]-
Benzenethiol
Benzyl chloride
Beryllium dust
Bis (chloromethyl) ether
Bromoacetone
Brucine
Calcium cyanide
Camphene, octachloro-
Carbaminidoselenoic acid
Carbon bisulfide
Carbon disulfide
Carbonyl chloride
Chlorine cyanide
Chloroacetaldehyde
p-Chloroaniline
1-(o-Chlorophenyl) thiourea
3-Chloropropionitrile
Copper Cyanides
Cyanides (soluble cyanide salts), not elsewhere specified
Cyanogen
Cyanogen chloride
Dichlorophenylarsine
Dieldrin
Diethylarsine
O,O-Diethyl S-[2-(ethylthio)ethyl] phosphorodithioate
Diethyl-p-nitrophenyl phospate

Substance

O,O-Diethyl O-pyrazinyl phosphorothioate
Diisopropyl fluorophosphate
Dimethoate
3,3-Dimethyl-1-(methylthio)-2-butanone, O-[methylamino) carbonyl] oxime
O,O-Dimethyl O-p-nitrophenyl phosphorothioate
Dimethylnitrosamine
alpha, alpha-Dimethylphenethylamine
4,6-Dinitro-o-cresol and salts
4,6-Dinitro-o-cyclohexylphenol
2,4-Dinitrophenol
Dinoseb
Diphosphoramide, octamethyl-
Disulfoton
2,4-Dithiobiuret
Dithiopyrophosphoric acid, tetraethyl ester
Endosulfan
Endothall
Endrin
Epinephrine
Ethanamine, 1,1-dimethyl-2-phenyl
Ethenamine, N-methyl-N-nitroso-
Ethyl cyanide
Ethylenimine
Famphur
Fluorine
Fluoracetamide
Fluoroacetic acid, mercury (II) salt

Substance

Heptachlor
1,2,3,4,10,10-Hexachloro-6, 7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo, endo-1,4:5, 8-dimethanonaphthalene
1,2,3,4,10,10-Hexachloro-6, 7-epoxy-1,4,4a,5,6,7,8, 8a-octahydro-endo, exo- 1,4:5, 8-demethanonaphthalene
1,2,3,4,10,10-Hexachloro- 1,4,4a, 5,8,8a-hexahydro- 1,4:5, 8-endo, endo-dimethanonaphthalene
1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, exo-dimethanonaphthalene
Hexachlorohexahydro-exo, exo-dime-thanonaphthalene
Hexaethyl tetraphosphate
Hydrazinecarbothioamide
Hydrazine, methyl-
Hydrocyanic acid
Hydrogen cyanide
Hydrogen phosphide
Isocyanic acid, methyl ester
3(2H)-Isoxazolone, 5-(aminomethyl)
Mercury, (acetato-O)phenyl-
Mercury fulminate
Methane, oxybis (chloro-
Methane, tetranitro-
Methanethiol, trichloro-
4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetra-hydro-
Methomyl
2-Methylaziridine

Substance

Methyl hydrazine
Methyl isocyanate
2-Methyllactonitrile
Methyl parathion
alpha-Naphthylthiourea
Nickel carbonyl
Nickel cyanide
Nickle (II) cyanide
Nickel tetracarbonyl
Nicotine and salts
Nitric Oxide
p-Nitroaniline
Nitrogen dioxide
Nitrogen (II) oxide
Nitrogen (IV) oxide
Nitroglycerine
N-Nitrosodimethylamine
N-Nitrosomethylvinylamine
5-Norbornene-2,3-dimathanol, 1,4,5,6,7,7-hexachloro, cyclic sulfite
Octamethylprophosphoramide
Osmium oxide
7-Oxabicyclo [2.2.1] heptane-2,3-diacarboxylic acid
Parathion
Phenol, 2-cyclohexyl-4,6-dinitro
Phenol, 2,4-dinitro-
Phenol, 2,4-dinitro-6-methyl-
Phenol, 2,4-dinitro-6-(1-methylpropyl)-
Phenol, 2,4,6-trinitro, ammonium salt
Phenyl dichloroarsine
Phenylmercuric acetate
N-Phenylthiourea
Phorate
Phosgene
Phosphine

Substance

Phosphoric acid, diethyl p-nitrophenyl ester
Phosphorodithioic acid, O,O-dimethyl S-[2 (methylamino) 2-oxoethyl] ester
Phosphorothioic acid, bis (1-methylethyl)-ester
Phosphorothioic acid, O,O-diethyl S-(ethylthio)methyl ester
Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
Phosphorothioic acid, O, O-diemthyl-O-[p-((dimethylaminosulfonyl)phenyl]ester
Plumbane, tetraethyl-
Potassium cyanide
Potassium silver cyanide
Propanal, 2-methyl-2-(methylthio)-, 0[(methylamino) Carbonyl]oxime
Propaneitrile
Propanenitrile, 3-chloro-
Propanenitrile, 2-hydroxy-2-methyl-
1,2,3-Propanetriol, trinitrate-
2-Propanone, 1-bromo-
Propargyl alcohol
2-Propanal
2-Propen-ol
1,2 Propylenimine
2-Propyn-1-o1
4-Pyridinamine
Pyridine, (S)-3-(1-methyl-2-Pyrrolidinyl)-, and salts
Prophosphoric acid, tetraethyl ester
Selenourea
Silver cyanide

Substance

Strychnidin-10-one, 2,3,
  -dimethoxy-
Strychnine and salts
Sulfuric acid, Thallium (1) salt
Tetraethyldithiopyrophosphate
Tetranitromethane
Tetraphosphoric acid,
  hexaethyl ester
Thallic oxide
Thallium (III) oxide
Thallium (I) selenite
Thallium (I) sulfate
Thiofanox
Thioimidodicarbonic diamide
Thiophenol
Thiosemicarbazide
Thiourea (2-chlorophenyl)-
Thiourea, 1 naptthalenyl-
Thiourea, phenyl-
Toxaphene
Trichloromethanethiol
Vanadic acid, ammonium salt
Vanadium pentoxide
Vanadium (V) oxide
Warfarin, when present at concentrations greater than 0.3%
Zinc cyanide
Zinc Phosphide, when present at concentrations greater than 10%
Sodium azide
Sodium cyanide
Strontium sulfide
Strychnidin-10-one, and salts

ii)

COMMERCIAL GENERAL LIABILITY POLICY

Read The Policy Carefully

DECLARATIONS PAGE

Coverages and Limits of Insurance

Form, Description and Location of Business

Beginning on Page

SECTION I – COVERAGES

Coverage A – Bodily Injury and Property Damage Liability
- Insuring Agreement 3
- Exclusions 3

Coverage B – Personal Injury Liability
- Insuring Agreement 4
- Exclusions 4

Coverage C – Medical Payments
- Insuring Agreement 5
- Exclusions 5

Coverage D – Tenants' Legal Liability
- Insuring Agreement 5
- Exclusions 5

Common Exclusions 6

Supplementary Payments 7

SECTION II – WHO IS AN INSURED 7

SECTION III – LIMITS OF INSURANCE 8

SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS 8
- Bankruptcy 8
- Canadian Currency Clause 8
- Cancellation 8
- Changes 8
- Duties in the Event of Occurrence, Claim or Action 8
- Examination of the Named Insured's Books and Records 8
- Inspections and Surveys 9
- Legal Action Against the Insurer 9
- Other Insurance 9
- Premium Audit 9
- Premiums 9
- Representations 10
- Separation of Insureds, Cross Liability 10
- Transfer of Rights of Recovery Against Others To the Insurer 10
- Transfer of the Named Insured's Rights and Duties Under This Policy 10

SECTION V – DEFINITIONS 10

– DESCRIPTION OF TERMS USED FOR PREMIUM BASES 11

COMMERCIAL GENERAL LIABILITY RIDER

Various provisions in this policy restrict coverage. Read the entire policy carefully to determine rights, duties and what is and is not covered.
The word "insured" means any person or organization qualifying as such under SECTION II – WHO IS AN INSURED.
Other words and phrases that appear in quotation marks have special meaning.

SECTION I – COVERAGES

COVERAGE A. BODILY INJURY AND PROPERTY DAMAGE LIABILITY

This insurance applies only when an EACH OCCURRENCE LIMIT is indicated on the DECLARATIONS page.

1. **Insuring Agreement.**
   a. The Insurer will pay those sums that the Insured becomes legally obligated to pay as compensatory damages because of "bodily injury" or "property damage" to which this insurance applies. No other obligation or liability to pay sums or perform acts or services is covered unless explicitly provided for under SUPPLEMENTARY PAYMENTS – COVERAGES A, B AND D. This insurance applies only to "bodily injury" and "property damage" which occurs during the policy period. The "bodily injury" or "property damage" must be caused by an "occurrence". The "occurrence" must take place in the "coverage territory". The Insurer will have the right and duty to defend any "action" seeking those compensatory damages. But:
      1) The amount the Insurer will pay for compensatory damages is limited as described in SECTION III – LIMITS OF INSURANCE;
      2) The Insurer may investigate and settle any claim or "action" at the Insurer's discretion; and
      3) The Insurer's right and duty to defend end when the Insurer has used up the applicable limit of insurance in the payment of judgments or settlements under Coverages A, B or D or medical expenses under Coverage C.

   b. Compensatory damages because of "bodily injury" include compensatory damages claimed by any person or organization for care, loss of services or death resulting at any time from the "bodily injury".

   c. "Property damage" that is loss of use of tangible property that is not physically injured shall be deemed to occur at the time of the "occurrence" that caused it.

2. **Exclusions** (See also the attached endorsement: "Additional Exclusions added to 2. Exclusions of Coverage A"!)
   This insurance does not apply to:
   a. "Bodily injury" or "property damage" expected or intended from the standpoint of the insured. This exclusion does not apply to "bodily injury" resulting from the use of reasonable force to protect persons or property.

   b. "Bodily injury" or "property damage" for which the insured is obligated to pay compensatory damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for compensatory damages:
      1) Assumed in a contract or agreement that is an "insured contract"; or
      2) That the insured would have in the absence of the contract or agreement.

   c. Any obligation of the insured under a workers compensation, disability benefits or unemployment compensation law or any similar law.

   d. "Bodily injury" to an employee of the insured arising out of and in the course of employment by the insured.
      This exclusion applies:
      1) Whether the insured may be liable as an employer or in any other capacity; and
      2) To any obligation to share compensatory damages with or repay someone else who must pay compensatory damages because of the injury.

      This exclusion does not apply:
      i) To liability assumed by the insured under an "insured contract"; or
      ii) To employees on whose behalf contributions are made by or required to be made by the insured under the provisions of any workers compensation law.

   e. 1) "Bodily injury" or "property damage" arising out of the ownership, use, operation or entrustment to others by or on behalf of any insured of:
         a) Any "automobile";
         b) Any motorized snow vehicle or its trailers;
         c) Any vehicle while being used in any speed or demolition contest or in any stunting activity or in practice or preparation for any such contest or activity; or
         d) Any vehicle which if it were to be insured would be required by law to be insured under a contract evidenced by a motor vehicle liability policy, or any vehicle insured under such a contract, but this exclusion does not apply to the ownership, use or operation of machinery, apparatus or equipment mounted on or attached to any vehicle while at the site of the use or operation of such equipment.

      2) "Bodily injury" or "property damage" with respect to which any motor vehicle liability policy is in effect or would be in effect but for its termination upon exhaustion of its limit of liability or is required by law to be in effect.

   f. "Bodily injury" or "property damage" arising out of the ownership, maintenance, use, operation, loading or unloading, or entrustment to others, by or on behalf of any insured of any watercraft.
      This exclusion does not apply to:
      1) A watercraft while ashore on premises the Named Insured owns or rents;
      2) A watercraft the Named Insured does not own that is:
         a) Less than 8 meters long; and
         b) Not being used to carry persons or property for a charge.

   g. 1) "Bodily injury" or "property damage" arising out of the ownership, maintenance, use, operation, loading or unloading, or the entrustment to others, by or on behalf of any insured of:
         a) Any aircraft; or
         b) Any air cushion vehicle.

      2) "Bodily injury" or "property damage" arising out of the ownership, existence, use, operation or entrustment to others by or on behalf of any insured of any premises for the purpose of an airport or aircraft landing area and all operations necessary or incidental thereto.

(n) "property damage" to
1) property owned or occupied by or rented to the insured

h. "Property damage" to:

   1) Property owned or occupied by or rented to the insured;
   2) Premises the insured sells, gives away or abandons, if the "property damage" arises out of any part of those premises;
   3) Property loaned to the insured;
   4) Personal property in the insured's care, custody or control;
   5) That particular part of real property on which the insured or any contractor or subcontractor working directly or indirectly on the insured's behalf is performing operations, if the "property damage" arises out of those operations; or
   6) That particular part of any property that must be restored, repaired or replaced because "the Named Insured's work" was incorrectly performed on it.

   Paragraph 2) of this exclusion does not apply if the premises are "the Named Insured's work" and were never occupied, rented or held for rental by the insured.

   Paragraphs 3), 4), 5) and 6) of this exclusion do not apply to liability assumed under a sidetrack agreement.

   Paragraph 6) of this exclusion does not apply to "property damage" included in the "products-completed operations hazard".

i. "Property damage" to "the Named Insured's product" arising out of it or any part of it.

j. "Property damage" to "the Named Insured's work" arising out of it or any part of it and included in the "products-completed operations hazard".

   This exclusion does not apply if the damaged work or the work out of which the damage arises was performed on the insured's behalf by a subcontractor.

k. "Property damage" to "impaired property" or property that has not been physically injured, arising out of:

   1) A defect, deficiency, inadequacy or dangerous condition in "the Named Insured's product" or "the Named Insured's work"; or
   2) A delay or failure by the insured or anyone acting on the insured's behalf to perform a contract or agreement in accordance with its terms.

   This exclusion does not apply to the loss of use of other property arising out of sudden and accidental physical injury to "the Named Insured's product" or "the Named Insured's work" after it has been put to its intended use.

l. Any loss, cost or expense incurred by the insured or others for the loss of use, withdrawal, recall, inspection, repair, replacement, adjustment, removal or disposal of:

   1) "The Named Insured's product";
   2) "The Named Insured's work"; or
   3) "Impaired property";

   if such product, work, or property is withdrawn or recalled from the market or from use by any person or organization because of a known or suspected defect, deficiency, inadequacy or dangerous condition in it.

m. Pollution Liability – See Common Exclusions.

n. Nuclear Liability – See Common Exclusions.

o. War Risks – See Common Exclusions.

p. Professional Liability – See Common Exclusions

COVERAGE B. PERSONAL INJURY LIABILITY

This insurance applies only when a PERSONAL INJURY LIMIT is indicated on the DECLARATIONS page.

1. **Insuring Agreement**

   a. The Insurer will pay those sums that the insured becomes legally obligated to pay as compensatory damages because of "personal injury" to which this insurance applies. No other obligation or liability to pay sums or perform acts or services is covered unless explicitly provided for under SUPPLEMENTARY PAYMENTS – COVERAGES A, B AND D. The Insurer will have the right and duty to defend any "action" seeking those compensatory damages. But:

      1) The amount the Insurer will pay for compensatory damages is limited as described in SECTION III – LIMITS OF INSURANCE;
      2) The Insurer may investigate and settle any claim or "action" at the Insurer's discretion; and
      3) The Insurer's right and duty to defend end when the Insurer has used up the applicable limit of insurance in the payment of judgments or settlements under Coverages A, B or D or medical expenses under Coverage C.

   b. This insurance applies to "personal injury" only if caused by an offence:

      1) Committed in the "coverage territory" during the policy period; and
      2) Arising out of the conduct of the Named Insured's business, excluding advertising, publishing, broadcasting or telecasting done by or for the Named Insured.

2. **Exclusions**

   This insurance does not apply to:

   a. "Personal injury":

      1) Arising out of oral or written publication of material, if done by or at the direction of the insured with knowledge of its falsity;
      2) Arising out of oral or written publication of material whose first publication took place before the beginning of the policy period;
      3) Arising out of the wilful violation of a penal statute or ordinance committed by or with the consent of the insured; or
      4) For which the insured has assumed liability in a contract or agreement. This exclusion does not apply to liability for compensatory damages that the insured would have in the absence of the contract or agreement.

   b. Professional Liability – See Common Exclusions.

COVERAGE C. MEDICAL PAYMENTS

This insurance applies only when a Medical Expense Limit is indicated on the DECLARATIONS page.

1. **Insuring Agreement.**
   a. The Insurer will pay medical expenses as described below for "bodily injury" caused by an accident:
      1) On premises the Named Insured owns or rents;
      2) On ways next to premises the Named Insured owns or rents; or
      3) Because of the Named Insured's operations;

      provided that:
      a) The accident takes place in the "coverage territory" and during the policy period;
      b) The expenses are incurred and reported to the Insurer within one year of the date of the accident; and
      c) The injured person submits to examination, at the Insurer's expense, by physicians of the Insurer's choice as often as the Insurer reasonably requires.

   b. The Insurer will make these payments regardless of fault. These payments will not exceed the applicable limit of insurance. The Insurer will pay reasonable expenses for:
      1) First aid at the time of an accident;
      2) Necessary medical, surgical, x-ray and dental services, including prosthetic devices; and
      3) Necessary ambulance, hospital, professional nursing and funeral services.

2. **Exclusions.**

   The Insurer will not pay expenses for "bodily injury":
   a. To any insured.
   b. To a person hired to do work for or on behalf of any insured or a tenant of any insured.
   c. To a person injured on that part of premises the Named Insured owns or rents that the person normally occupies.
   d. To a person, whether or not an employee of any insured, who at the time of injury is entitled is to benefits under any workers compensation or disability benefits law or a similar law.
   e. To a person injured while taking part in athletics.
   f. The payment of which is prohibited by law.
   g. Included within the "products-completed operations hazard".
   h. Excluded under Coverage A.

COVERAGE D. TENANTS' LEGAL LIABILITY

This insurance applies only when a Tenants' Legal Liability Limit is indicated on the DECLARATIONS page.

1. **Insuring Agreement.**

   The Insurer will pay those sums that the insured becomes legally obligated to pay as compensatory damages because of "property damage" to which this insurance applies. No other obligation or liability to pay sums or perform acts or services is covered unless explicitly provided for under SUPPLEMENTARY PAYMENTS – COVERAGES A, B AND D. This insurance applies only to "property damage" to structures or portions thereof including fixtures permanently attached thereto rented to the Named Insured or occupied by the Named Insured. This insurance applies only to "property damage" which occurs, during the policy period. The "property damage" must be caused by an "occurrence". The "occurrence" must take place in the "coverage territory". The Insurer will have the right and duty to defend any "action" seeking those compensatory damages. But:
   a. The amount the Insurer will pay for compensatory damages is limited as described in SECTION III – LIMITS OF INSURANCE;
   b. The Insurer may investigate and settle any claim or "action" at the Insurer's discretion; and
   c. The Insurer's right and duty to defend end when the Insurer has used up the applicable limit of insurance in the payment of judgments or settlements under Coverage A, B or D or medical expenses under Coverage C.

2. **Exclusions**

   This insurance does not apply to:
   a. "Property damage" expected or intended from the standpoint of the insured.
   b. "Property damage" for which the insured is obligated to pay compensatory damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for compensatory damages that the insured would have in the absence of the contract or agreement.
   c. "Property Damage" for wear and tear, gradual deterioration, normal upkeep, latent defect, or inherent vice.
   d. "Property Damage" for the cost of making good:
      1) faulty or improper material;
      2) faulty or improper workmanship;
      3) faulty or improper design;

      provided, however, to the extent otherwise insured and not otherwise excluded under this policy, resultant "property damage" to the property is insured.
   e. Pollution Liability – See Common Exclusions.
   f. Nuclear Energy Liability – See Common Exclusions.
   g. War Risks – See Common Exclusions.
   h. Professional Liability – See Common Exclusions.

COMMON EXCLUSIONS – COVERAGES A, C AND D

This insurance does not apply to:

1. **Pollution Liability**
    - a. "Bodily injury" or "property damage" arising out of the actual, alleged or threatened discharge, dispersal, release or escape of pollutants:
        - 1) At or from premises owned, managed, rented to others or occupied by the insured, or rented to the insured;
        - 2) At or from any site or location used by or for the insured or others for the handling, storage, disposal, processing or treatment of waste;
        - 3) Which are at any time transported, handled, stored, treated, disposed of, or processed as waste by or for the insured or any person or organization for whom the insured may be legally responsible; or
        - 4) At or from any site or location on which the insured or any contractors or sub-contractors working directly or indirectly on the behalf of the insured are performing operations:
            - a) if the pollutants are brought on or to the site or location in connection with such operations; or
            - b) if the operations are to test for, monitor, clean up, remove, contain, treat, detoxify or neutralize the pollutants.
    - b. Any loss, cost, or expense arising out of any governmental direction or request that the insured tests for, monitors, cleans up, removes, contains, treats, detoxifies or neutralizes pollutants.

    Subparagraphs 1) and 4)a) of paragraph a. of this exclusion do not apply to "bodily injury" or "property damage" caused by heat, smoke or fumes from a hostile fire.

    A "hostile fire" means one which becomes uncontrollable, or breaks out from where it was intended to be.

    "Pollutants" means any solid, liquid, gaseous or thermal irritant or contaminant, including smoke, vapor, soot, fumes, acids, alkalis, chemicals and waste. Waste includes materials to be recycled, reconditioned or reclaimed.
2. **Nuclear Energy Liability**
    - a. Liability imposed by or arising under the Nuclear Liability Act; nor
    - b. "Bodily injury" or "property damage" with respect to which an insured under this policy is also insured under a contract of nuclear energy liability insurance (whether the insured is unnamed in such contract and whether or not it is legally enforceable by the insured) issued by the Nuclear Insurance Association of Canada or any other insurer or group or pool of insurers or would be an insured under any such policy but for its termination upon exhaustion of its limit of liability; nor
    - c. "Bodily injury" or "property damage" resulting directly or indirectly from the nuclear energy hazard arising from:
        - 1) the ownership, maintenance, operation or use of a nuclear facility by or on behalf of an insured;
        - 2) the furnishing by an insured of services, materials, parts or equipment in connection with the planning, construction, maintenance, operation or use of any nuclear facility;
        - 3) the possession, consumption, use, handling, disposal or transportation of fissionable substances, or of other radioactive material (except radioactive isotopes, away from a nuclear facility, which have reached the final stage of fabrication so as to be useable for any scientific, medical, agricultural, commercial or industrial purpose) used, distributed, handled or sold by an insured.

    As used in this policy:

    - i) The term "nuclear energy hazard" means the radioactive, toxic, explosive, or other hazardous properties of radioactive material;
    - ii) The term "radioactive material" means uranium, thorium, plutonium, neptunium, their respective derivatives and compounds, radioactive isotopes of other elements and any other substances that the Atomic Energy Control Board may, by regulation, designate as being prescribed substances capable of releasing atomic energy, or as being requisite for the production, use or application of atomic energy;
    - iii) The term "nuclear facility" means:
        - a) any apparatus designed or used to sustain nuclear fission in a self-supporting chain reaction or to contain a critical mass of plutonium, thorium and uranium or any one or more of them;
        - b) any equipment or device designed or used for (i) separating the isotopes of plutonium, thorium and uranium or any one or more of them, (ii) processing or utilizing spent fuel, or (iii) handling, processing or packaging waste;
        - c) any equipment or device used for the processing, fabricating or alloying of plutonium, thorium or uranium enriched in the isotope uranium 233 or in the isotope uranium 235, or any one or more of them if at any time the total amount of such material in the custody of the insured at the premises where such equipment or device is located consists of or contains more than 25 grams of plutonium or uranium 233 or any combination thereof, or more than 250 grams of uranium 235;
        - d) any structure, basin, excavation, premises or place prepared or used for the storage or disposal of waste radioactive material;

        and includes the site on which any of the foregoing is located, together with all operations conducted thereon and all premises used for such operations.
    - iv) The term "fissionable substance" means any prescribed substance that is, or from which can be obtained, a substance capable of releasing atomic energy by nuclear fission.
3. **War Risks**

    "Bodily injury" or "property damage" due to war, invasion, act of foreign enemy, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection or military power.

COMMON EXCLUSIONS – COVERAGES A, B, C AND D

This insurance does not apply to:

1. **Professional Liability**
    - a. "Bodily injury" (other than Incidental Medical Malpractice Injury) or "property damage" or "personal injury" due to the rendering of or failure to render any professional service which shall include but not be limited to
        - 1) medical, surgical, dental, x-ray or nursing service or treatment, or the furnishing of food or beverages in connection therewith,
        - 2) any service or treatment conducive to health or of a professional nature,
        - 3) the furnishing or dispensing of drugs or medical, dental or surgical supplies or appliances,
        - 4) the handling of deceased human bodies or performing of autopsies thereon,
        - 5) any cosmetic, ear piercing, tonsorial, massage, physiotherapy, chiropody, hearing aid, optical or optometrical service or treatments,
        - 6) the preparation or approval of maps, drawings, plans, opinions, reports, surveys, change orders, designs or specifications,
        - 7) supervisory, inspection, architectural or engineering services, or
        - 8) accountant's, lawyer's, real estate broker's or agent's, insurance broker's or agent's, travel agent's, financial institution's, or consultant's professional advices or activities.

Incidental Medical Malpractice Injury means "bodily injury" arising out of the rendering of or failure to render, during the policy period, the following services

i) medical, surgical, dental, x-ray or nursing services or treatment or the furnishing of food or beverages in connection therewith, or

ii) the furnishing or dispensing of drugs or medical, dental or surgical supplies or appliances,

by any insured or any indemnitee causing the Incidental Medical Malpractice Injury who is not engaged in the business or occupation of providing any of the services described in i) and ii) above.

SUPPLEMENTARY PAYMENTS – COVERAGES A, B AND D.

The Insurer will pay, with respect to any claim or "action" the Insurer defends:

a. All expenses the Insurer incurs.

b. The cost of bonds to release attachments, but only for bond amounts within the applicable limit of insurance. The Insurer does not have to furnish these bonds.

c. All reasonable expenses incurred by the insured at the Insurer's request to assist the Insurer in the investigation or defence of the claim or "action", including actual loss of earnings up to $100 a day because of time off from work.

d. All costs taxed against the insured in the "action" and any interest accruing after entry of judgment upon that part of the judgment which is within the applicable limit of insurance.

These payments will not reduce the limits of insurance.

SECTION II – WHO IS AN INSURED

1. If the Named Insured is designated in the Declarations as:
    a. An individual, the Named Insured and the Named Insured's spouse are insureds, but only with respect to the conduct of a business of which the Named Insured is the sole owner.
    b. A partnership or joint venture, the Named Insured is an insured. The Named Insured's members, the Named Insured's partners, and their spouses are also insureds, but only with respect to the conduct of the Named Insured's business.
    c. An organization other than a partnership or joint venture, the Named Insured is an insured. The Named Insured's executive officers and directors are insureds, but only with respect to their duties as the Named Insured's officers or directors. The Named Insured's stockholders are also insureds, but only with respect to their liability as stockholders.
2. Each of the following is also an insured:
    a. The Named Insured's employees, other than the Named Insured's executive officers, but only for acts within the scope of their employment by the Named Insured. However, none of these employees is an insured for:
        1) "Bodily injury" or "personal injury" to the Named Insured or to a co-employee while in the course of his or her employment; or
        2) "Bodily injury" or "personal injury" to any person who at the time of injury is entitled to benefits under any workers compensation or disability benefits law or a similar law; or
        3) "Bodily injury" or "personal injury" arising out of his or her providing or failing to provide professional health care services; or
        4) "Property damage" to property owned, occupied or used by or rented or loaned to or in the care, custody or control of or over which physical control is being exercised for any purpose by that employee, any of the Named Insured's other employees, or any of the Named Insured's partners or members (if the Named Insured is a partnership or joint venture).
    b. Any person (other than the Named Insured's employee), or any organization while acting as the Named Insured's real estate manager.
    c. Any person or organization having proper temporary custody of the Named Insured's property if the Named Insured dies, but only:
        1) With respect to liability arising out of the maintenance or use of that property; and
        2) Until the Named Insured's legal representative has been appointed.
    d. The Named Insured's legal representative if the Named Insured dies, but only with respect to duties as such. That representative will have all the Named Insured's rights and duties under this policy.
3. Any organization the Named Insured newly acquires or forms, other than a partnership or joint venture, and over which the Named Insured maintains ownership or majority interest, will be deemed to be a Named Insured if there is no other similar insurance available to that organization. However:
    a. Coverage under this provision is afforded only until the 90th day after the Named Insured acquires or forms the organization or the end of the policy period, whichever is earlier;
    b. Coverages A and D do not apply to "bodily injury" or "property damage" that occurred before the Named Insured acquired or formed the organization; and
    c. Coverage B does not apply to "personal injury" arising out of an offence committed before the Named Insured acquired or formed the organization.

No person or organization is an insured with respect to the conduct of any current or past partnership or joint venture that is not shown as a Named Insured in the Declarations.

SECTION III – LIMITS OF INSURANCE

1. The Limits of Insurance shown in the Declarations and the rules below fix the most the Insurer will pay regardless of the number of:
   a. Insureds;
   b. Claims made or "actions" brought; or
   c. Persons or organizations making claims or bringing "actions".
2. The Aggregate Limit is the most the Insurer will pay for the sum of:
   a. Medical expenses under Coverage C; and
   b. Compensatory damages under Coverage A, Coverage B and Coverage D.
3. a. Subject to 2. above, the Each Occurrence Limit is the most the Insurer will pay for the sum of:
      1) Compensatory damages under Coverage A and Coverage D; and
      2) Medical expenses under Coverage C;

      Because of all "bodily injury" and "property damage" arising out of any one "occurrence".
   b. 1) The Insurer's obligation under COVERAGE A. to pay as compensatory damages because of "property damage" applies only to the amount of compensatory damages in excess of the deductible amount stated on the DECLARATIONS page. The limits of insurance applicable to "each occurrence" for Bodily Injury and Property Damage Liability will be reduced by the amount of such deductible. The "Aggregate Limit" for such coverages shall not be reduced by the application of such deductible amount.
      2) The deductible amount applies to all compensatory damages because of "property damage" sustained by any one person or organization as the result of any one "occurrence". If more than one claim arises out of the same occurrence, then the deductible amount shall be applied to each claimant separately.
      3) The terms of this insurance, including those with respect to:
         a) the Insurer's right and duty to defend any "action" seeking those damages; and
         b) the duties of an insured in the event [illegible] an "occurrence", claim or "action" apply irrespective of the application of the deductible amount.
      4) The Insurer may pay any part or all of the deductible amount to effect settlement of any claim or "action" and, upon notification of the action taken, the Named Insured shall promptly reimburse the Insurer for such part of the deductible amount as has been paid by the Insurer.
   c. All compensatory damages arising out of one lot of goods or products prepared or acquired by the Named Insured, or by another trading under his name, shall be considered as arising out of one "occurrence" as regards "bodily injury" and "property damage".
4. Subject to 2. above, the Personal Injury Limit is the most the Insurer will pay under Coverage B for the sum of all compensatory damages because of all "personal injury" sustained.
5. Subject to 3. above, the Medical Expense Limit is the most the Insurer will pay under Coverage C for all medical expenses because of "bodily injury" sustained by any one person.
6. Subject to 3. above, the Tenants' Legal Liability Limit is the most the Insurer will pay under Coverage D for compensatory damages because of "property damage" to any one premises.

The limits of this policy apply separately to each consecutive annual period and to any remaining period of less than 12 months, starting with the beginning of the policy period shown in the Declarations, unless the policy period is extended after issuance for an additional period of less than 12 months. In that case, the additional period will be deemed part of the last preceding period for purposes of determining the Limits of Insurance.

SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS

1. **Bankruptcy.**

   Bankruptcy or insolvency of the insured or of the insured's estate will not relieve the Insurer of the Insurer's obligations under this policy.
2. **Canadian Currency Clause.**

   All limits of insurance, premiums and other amounts as expressed in this policy are in Canadian currency.
3. **Cancellation.**
   a. The first Named Insured shown in the Declarations may cancel this policy by mailing or delivering to the Insurer advance written notice of cancellation.
   b. The Insurer may cancel this policy by mailing or delivering to the first Named Insured written notice of cancellation:
      1) 15 days before the effective date of cancellation if the Insurer cancels for non-payment of premium; or
      2) 30 days before the effective date of cancellation if the Insurer cancels for any other reason.

      In Quebec, the Insurer's notice of cancellation takes effect either 15 or 30 days after receipt at the last known address of the first Named Insured, depending upon the reason for cancellation.
   c. The Insurer will mail or deliver the Insurer's notice to the first Named Insured's last mailing address known to the Insurer.
   d. The policy period will end on the effective date of cancellation.
   e. If this policy is cancelled, the Insurer will send the first Named Insured any premium refund due. If the Insurer cancels, the refund will be pro rata. If the first Named Insured cancels, the refund may be less than pro rata. The cancellation will be effective even if the Insurer has not made or offered a refund.
   f. If notice is mailed, proof of mailing will be sufficient proof of notice.
4. **Changes.**

   This policy contains all the agreements between the Named Insured and the Insurer concerning the insurance afforded. The first Named Insured shown in the Declarations is authorized to make changes in the terms of this policy with the Insurer's consent. This policy's terms can be amended or waived only by endorsement issued by the Insurer and made a part of this policy.
5. **Duties in the Event of Occurrence, Claim or Action.**
   a. The Named Insured must see to it that the Insurer is notified promptly of an "occurrence" which may result in a claim. Notice should include:
      1) How, when and where the "occurrence" took place; and
      2) The names and addresses of any injured persons and of witnesses.
   b. If a claim is made or "action" is brought against any insured, the Named Insured must see to it that the Insurer receives prompt written notice of the claim or "action".

c. The Named Insured and any other involved insured must:
   1) Immediately send the Insurer copies of any demands, notices, summonses or legal papers received in connection with the claim or "action";
   2) Authorize the Insurer to obtain records and other information;
   3) Cooperate with the Insurer in the investigation, settlement or defence of the claim or "action"; and
   4) Assist the Insurer, upon the Insurer's request, in the enforcement of any right against any person or organization which may be liable to the insured because of injury or damage to which this insurance may also apply.

d. No insureds will, except at their own cost, voluntarily make a payment, assume any obligation, or incur any expense, other than for first aid, without the Insurer's consent.

6. Examination of The Named Insured's Books and Records.

The Insurer may examine and audit the Named Insured's books and records as they relate to this policy at any time during the policy period and up to three years afterward.

7. Inspections and Surveys.

The Insurer has the right but is not obligated to:

a. Make inspections and surveys at any time;

b. Give the Named Insured reports on the conditions the Insurer finds; and

c. Recommend any changes.

Any inspections, surveys, reports or recommendations relate only to insurability and the premiums to be charged. The Insurer does not make safety inspections. The Insurer does not undertake to peform the duty of any person or organization to provide for the health or safety of workers or the public. And the Insurer does not warrant that conditions:

i) Are safe or healthful; or

ii) Comply with laws, regulations, codes or standards.

This condition applies not only to the Insurer, but also to any rating, advisory, rate service or similar organization which makes insurance inspections, surveys, reports or recommendations.

8. Legal Action Against The Insurer.

No person or organization has a right under this policy:

a. To join the Insurer as a party or otherwise bring the Insurer into an "action" asking for compensatory damages from an insured; or

b. To sue the Insurer on this policy unless all of its terms have been fully complied with.

A person or organization may sue the Insurer to recover on an agreed settlement or on a final judgment against an insured obtained after an actual trial; but the Insurer will not be liable for compensatory damages that are not payable under the terms of this policy or that are in excess of the applicable limit of insurance. An agreed settlement means a settlement and release of liability signed by the Insurer, the insured and the claimant or the claimant's legal representative. Every "action" or proceeding against the Insurer shall be commenced within one year next after the date of such judgment or agreed settlement and not afterwards. If this policy is governed by the law of Quebec every "action" or proceeding against the Insurer shall be commmenced within three years from the time the right of action arises.

9. Other Insurance.

If other valid and collectible insurance is available to the insured for a loss the Insurer covers under Coverage A, B or D of this policy, the Insurer's obligations are limited as follows:

a. **Primary Insurance**

This insurance is primary except when b. below applies. If this insurance is primary, the Insurer's obligations are not affected unless any of the other insurance is also primary. Then, the Insurer will share with all that other insurance by the method described in c. below.

b. **Excess Insurance**

This insurance is excess over any of the other insurance, whether primary, excess, contingent or on any other basis:

1) That is Property Insurance such as, but not limited to, Fire, Extended Coverage, Builder's Risk, Installation Risk or similar coverage for "the Named Insured's work" or for premises rented to the Named Insured; or

2) If the loss arises out of the maintenance or use of watercraft to the extent not subject to Exclusion f. of Coverage A (Section I).

When this insurance is excess, the Insurer will have no duty under Coverage A, B or D to defend any claim or "action" that any other insurer has a duty to defend. If no other insurer defends, the Insurer will undertake to do so, but the Insurer will be entitled to all the insured's rights against all those other insurers.

When this insurance is excess over other insurance, the Insurer will pay only the Insurer's share of the amount of the loss, if any, that exceeds the sum of:

i) The total amount that all such other insurance would pay for the loss in the absence of this insurance; and

ii) The total of all deductible and self-insured amounts under all that other insurance.

The Insurer will share the remaining loss, if any, with any other insurance that is not described in this Excess Insurance provision and was not bought specifically to apply in excess of the Limits of Insurance shown in the Declarations of this policy.

c. **Method of Sharing**

If all of the other insurance permits contribution by equal shares, the Insurer will follow this method also. Under this approach each insurer contributes equal amounts until it has paid its applicable limit of insurance or none of the loss remains, whichever comes first.

If any of the other insurance does not permit contribution by equal shares, the Insurer will contribute by limits. Under this method, each insurer's share is based on the ratio of its applicable limit of insurance to the total applicable limits of insurance of all insurers.

10. Premium Audit

a. The Insurer will compute all premiums for this policy in accordance with the Insurer's rules and rates.

b. Premium shown in this policy as advance premium is a deposit premium only. At the close of each audit period the Insurer will compute the earned premium for that period. Audit premiums are due and payable on notice to the first Named Insured. If the sum of the advance and audit premiums paid for the policy term is greater than the earned premium, the Insurer will return the excess to the first Named Insured subject to the retention of the minimum premium shown in the Declarations of the policy.

c. The first Named Insured must keep records of the information the Insurer needs for premium computation, and send the Insurer copies at such times as the Insurer may request.

11. Premiums.

The first Named Insured shown in the Declarations:

a. Is responsible for the payment of all premiums; and

b. Will be the payee for any return premiums the Insurer pays.

12. **Representations.**

By accepting this policy, the Named Insured agrees:

- a. The statements in the Declarations are accurate and complete;
- b. Those statements are based upon representations the Named Insured made to the Insurer; and
- c. The Insurer has issued this policy in reliance upon the Named Insured's representations.

13. **Seperation of Insureds, Cross Liability**

Except with respect to the Limits of Insurance, and any rights or duties specifically assigned to the first Named Insured, this insurance applies:

- a. As if each Named Insured were the only Named Insured; and
- b. Separately to each insured against whom claim is made or "action" is brought.

14. **Transfer of Rights of Recovery Against Others to The Insurer.**

If the insured has rights to recover all or part of any payment the Insurer has made under this policy, those rights are transferred to the Insurer. The insured must do nothing after loss to impair them. At the Insurer's request, the insured will bring "action" or transfer those rights to the Insurer and help the Insurer enforce them.

15. **Transfer of the Named Insured's Rights and Duties Under this Policy.**

The Named Insured's rights and duties under this policy may not be transferred without the Insurer's written consent except in the case of death of an individual Named Insured. If the Named Insured dies, the Named Insured's rights and duties will be transferred to the Named Insured's legal representative but only while acting within the scope of duties as the Named Insured's legal representative. Until the Named Insured's legal representative is appointed, anyone having proper temporary custody of the Named Insured's property will have the Named Insured's rights and duties but only with respect to that property.

SECTION V – DEFINITIONS

1. **"Action"** means a civil proceeding in which compensatory damages because of "bodily injury", "property damage" or "personal injury" to which this insurance applies are alleged. "Action" includes an arbitration proceeding alleging such damages to which the Named Insured must submit or submit with the Insurer's consent.
2. **"Automobile"** means any self-propelled land motor vehicle, trailer or semi-trailer (including machinery, apparatus, or equipment attached thereto) which is principally designed and is being used for transportation of persons or property on public roads.
3. **"Bodily injury"** means bodily injury, sickness or disease sustained by a person, including death resulting from any of these at any time.
4. **"Coverage territory"** means:
   - a. Canada and the United States of America (including its territories and possessions);
   - b. International waters or airspace, provided the injury or damage does not occur in the course of travel or transportion to or from any place not included in a. above; or
   - c. All parts of the world if:
     - 1) The injury or damage arises out of:
       - a) Goods or products made or sold by the Named Insured in the territory described in a. above; or
       - b) The activities of a person whose home is in the territory described in a. above, but is away for a short time on the Named Insured's business; and
     - 2) The insured's responsibility to pay compensatory damages is determined in an "action" on the merits, in the territory described in a. above or in a settlement the Insurer agrees to in writing.
5. **"Impaired property"** means tangible property, other than "the Named Insured's product" or "the Named Insured's work", that cannot be used or is less useful because:
   - a. It incorporates "the Named Insured's product" or "the Named Insured's work" that is known or thought to be defective, deficient, inadequate or dangerous; or
   - b. The Named Insured has failed to fulfill the terms of a contract or agreement;

   If such property can be restored to use by:
   - i) The repair, replacement, adjustment or removal of "the Named Insured's product" or "the Named Insured's work"; or
   - ii) The Named Insured's fulfilling the terms of the contract or agreement.
6. **"Insured contract"** means:
   - a. A lease of premises;
   - b. A sidetrack agreement;
   - c. An easement or license agreement in connection with vehicle or pedestrian private railroad crossings at grade;
   - d. Any other easement agreement;
   - e. An indemnification of a municipality as required by ordinance, except in connection with work for a municipality;
   - f. An elevator maintenance agreement; or
   - g. That part of any other contract or agreement pertaining to the Named Insured's business under which the Named Insured assumes the tort liability of another to pay compensatory damages because of "bodily injury" or "property damage" to a third person or organization, if the contract or agreement is made prior to the "bodily injury" or "property damage." Tort liability means a liability that would be imposed by law in the absence of any contract or agreement.
7. **"Occurrence"** means an accident, including continuous or repeated exposure to substantially the same general harmful conditions.
8. **"Personal injury"** means injury, other than "bodily injury", arising out of one or more of the following offences:
   - a. False arrest, detention or imprisonment;
   - b. Malicious prosecution;
   - c. Wrongful entry into, or eviction of a person from, a room, dwelling or premises that the person occupies;
   - d. Oral or written publication of material that slanders or libels a person or organization or disparages a person's or organization's goods, products or services; or
   - e. Oral or written publication of material that violates a person's right of privacy.
9. a. **"Products-completed operations hazard"** includes all "bodily injury" and "property damage" occuring away from premises the Named Insured owns or rents and arising out of "the Named Insured's product" or "the Named Insured's work" except:
   - 1) Products that are still in the Named Insured's physical possession; or
   - 2) Work that has not yet been completed or abandoned.

b. "The Named Insured's work" will be deemed completed at the earliest of the following times:
   1) When all of the work called for in the Named Insured's contract has been completed.
   2) When all of the work to be done at the site has been completed if the Named Insured's contract calls for work at more than one site.
   3) When that part of work done at a job site has been put to its intended use by any person or organization other than another contractor or sub-contractor working on the same project.

   Work that may need service, maintenance, correction, repair or replacement, but which is otherwise complete, will be treated as completed.

c. This hazard does not include "bodily injury" or "property damage" arising out of the existence of tools, uninstalled equipment or abandoned or unused materials.

10. "Property damage" means:
   a. Physical injury to tangible property, including all resulting loss of use of that property; or
   b. Loss of use of tangible property that is not physically injured.

11. "The Named Insured's product" means:
   a. Any goods or products, other than real property, manufactured, sold, handled, distributed or disposed of by:
      1) The Named Insured;
      2) Others trading under the Named Insured's name; or
      3) A person or organization whose business or assets the Named Insured has acquired; and
   b. Containers (other than vehicles), materials, parts or equipment furnished in connection with such goods or products.

   "The Named Insured's product" includes warranties or representations made at any time with respect to the fitness, quality, durability or performance of any of the items included in a. and b. above.

   "The Named Insured's product" does not include vending machines or other property rented to or located for the use of others but not sold.

12. "The Named Insured's work" means:
   a. Work or operations performed by the Named Insured or on the Named Insured's behalf; and
   b. Materials, parts or equipment furnished in connection with such work or operations.

   "The Named Insured's work" includes warranties or representations made at any time with respect to the fitness, quality, durability or performance of any of the items included in a. or b. above.

SECTION V – DESCRIPTION OF TERMS USED FOR PREMIUM BASES

1. "Area" means the square footage of the buildings to be insured excluding that portion of the basement used exclusively for storage or that portion of the premises used for heating or air conditioning plant purposes.
2. "Cost of work" means the total cost of all operations performed for the Named Insured during the policy period by independent contractors, including materials used or delivered for use by whomsoever supplied, except maintenance or ordinary alterations and repairs on premises owned or rented by the Named Insured.
3. "Receipts" means the gross amount of money charged by the Named Insured for such operations as are rated on a receipts basis during the policy period.
4. "Remuneration" means the total earnings during the policy period for each owner, partner, executive officer or employee.
5. "Sales" means the gross amount of money charged for all goods and products sold and distributed by the Named Insured or by others trading under his name during the policy period.
6. "Cost" means the total cost to any indemnitee, with respect to any contract which is insured, of all work let or sublet in connection with each specific project, including the cost of all labour, materials and equipment furnished, used or delivered for use in the execution of such work, whether furnished by the owner, contractor or the sub-contractor, including all fees, allowances, bonuses or commissions made, paid or due.

includ

LIABILITY ENDORSEMENT

(For use with Commercial General Liability Rider)
Attached to and forming part of this Policy

TOTAL POLLUTION EXCLUSION

The Pollution Liability exclusion of SECTION 1 - COMMON EXCLUSIONS - COVERAGES A, C AND D is deleted and replaced by the following:

This insurance does not apply to:

6. Pollution Liability

a. "Bodily injury" or "property damage" arising out of the actual, alleged or threatened discharge, dispersal, release or escape of pollutants however caused and whenever happening: — [illegible] arise [illegible] escape of

• Clean up — is covered.

b. Any loss, cost or expense incurred by any governmental body, or arising out of any governmental direction or request that the insured or any entity test for, trace, monitor, clean up, remove, contain, treat, detoxify or neutralize pollutants.

"Pollutants" means any solid, liquid, gaseous or thermal irritant or contaminant, including smoke, vapour, soot, fumes, acids, alkalis, chemicals and waste. Waste includes materials to be recycled, reconditioned or reclaimed.

Except as otherwise provided in this endorsement all terms, provisions and conditions of the policy shall have full force and effect.

ADDITIONAL EXCLUSIONS ADDED TO 2. EXCLUSIONS OF COVERAGE A

(q) "Property Damage" to or destruction of any hole or well, or any part thereof, in which or in the production from which the Insured has any interest.

(r) "Property Damage" to the equipment of drillers, servicers, testers or others when such equipment is underground in any well or hole in which the Insured has any interest or in respect of which the Insured has employed such drillers, servicers, testers or others.

(s) "Property Damage" to or destruction of any real or personal property below the surface of the ground.

  (i) in which property the Insured has any interest, or
  (ii) in which property any body corporate of which the Insured is a subsidiary has any interest, or
  (iii) in which property any body corporate which is a subsidiary of the Insured has any interest, or
  (iv) in which property any person or body corporate associated with the insured in any venture in respect of which the property is employed has any interest.

(t) "Property Damage" to any oil or gas well or hole which is being worked on by or on behalf of the Named Insured or any additional Insured interest. The term "well" as used herein shall not be deemed to include well head equipment or apparatus of a similar nature.

(u) Fines, penalties, punitive or exemplary damages.

For the purpose of these exclusions one corporation is a subsidiary of another when one such corporation and its directors and officers of any of them own or control, directly or indirectly more than 50% of the voting shares or stock of the other corporation.

IT IS FURTHER UNDERSTOOD AND AGREED that the Insured shall pay the first $2,500.00 of each and every claim arising out of "Property Damage" to underground property.

Except as otherwise provided in this endorsement all terms, provisions and conditions of the policy shall have full force and effect.

④

COVERAGE: ENVIRONMENTAL IMPAIRMENT LIABILITY INSURANCE

ENVIRONMENTAL IMPAIRMENT LIABILITY INSURANCE

This Policy is a Claims-Made Policy and is limited to Claims First Made Against the Insured during the Policy period - DEFENCE COSTS INCLUDED IN LIMIT OF LIABILITY - EXTENDED DISCOVERY AVAILABLE IN ACCORDANCE WITH POLICY CONDITIONS - READ YOUR POLICY CAREFULLY.

DECLARATIONS

POLICY NUMBER:

INSURED:

ADDRESS:

BUSINESS OF THE INSURED:

LOCATION(S): [illegible] 13! ([illegible])

TERRITORIAL LIMITS:

LIMITS OF LIABILITY: a) $2,000,000.00 Any One Claim
b) $2,000,000.00 Aggregate for each policy period

[illegible] located [illegible] from the scheduled [illegible]

RETAINED LIMIT: $20,000.00

POLICY PERIOD: From: To:

12:01 A.M. Standard time at the address of the Insured stated above.

PREMIUM: $26,600.00 Min. Annual & Deposit adjustable at $13.30/$1,000.00 gross receipts.

CANCELLATION: Thirty (30) Days

AGENCY:

See Nuclear Energy Liability Exclusion Endorsement and Endorsement No.'s 1 and 2 attached hereto and forming a part of this Policy.

Elliott Limited

Authorized Representative

In reliance upon the accuracy of statements in the application and in consideration of the premium and subject to the Declarations and terms of this Policy, the Company agrees with the Insured to provide coverage as follows:

I. INSURING AGREEMENTS

1. The Company agrees to indemnify the Insured against all damages that the Insured shall be legally obligated to pay arising out of Any One Claim(s) for Environmental Impairment in connection with the Location(s) and Business of the Insured for which there is:

   defined in Parag. 13 (P.5) and Declarations (preceding page)

   (a) A Claim First Made Against the Insured;
   (b) Other Notice of Claim First Received by the Insured;

   during the Policy Period and within the Territorial Limits.

   But see also 'Operational Coverage Endorsement' which extends protection to jobs [illegible] located away from the Scheduled locations

2. The Company agrees to indemnify the Insured against all damages that the Insured shall be legally obligated to pay under the concept of joint and several liability if the Insured's obligation is otherwise covered by this Policy.

3. The Company agrees to indemnify the Insured for all Costs and Expenses incurred by the Insured, with the written consent of the Company, in the investigation, defense or settlement of any claim covered by this Policy. This indemnification shall only apply to such Costs and Expenses that are incurred with respect to the portion of a claim covered by this Policy.

4. In the event of cancellation or nonrenewal by the Company then upon request of the Insured before the effective date of cancellation or nonrenewal of the Policy the Company shall issue an endorsement providing an extended discovery period. This endorsement shall cover Claims First Made Against the Insured subsequent to the effective date of the cancellation or nonrenewal arising out of actual or alleged Environmental Impairment which had taken place prior to the effective date of cancellation or nonrenewal. If the Insured fails to request the extended discovery period before the effective date of cancellation or nonrenewal of the Policy, the Insured shall not at a later date be able to exercise such right. The additional premium for such endorsement shall be determined by the Company at the time the endorsement is requested. The Insured shall pay the additional premium within 30 days of the effective date of cancellation or nonrenewal.

II. EXCLUSIONS

This Policy shall not apply to or include:

1. Any claim arising from Environmental Impairment if the Insured knew about or could reasonably have foreseen such Environmental Impairment prior to the inception of this Policy. N/A.

2. (a) maintaining or obtaining compliance with any valid and applicable statute, regulation or written instruction issued by any competent governmental authority; N/A.
   (b) any routine or normal Clean Up;
   (c) Clean Up within any Waste Facility.

3. Any Environmental Impairment directly or indirectly occasioned by, happening through or in consequence of war, invasion, acts of foreign enemies, hostilities, (whether war be declared or not), civil war, rebellion, revolution, insurrection, military or usurped power or confiscation or nationalization or requisition or destruction of or damage to property by or under the order of any competent governmental, public, or local authority.

4. Environmental Impairment arising out of noncompliance with any valid and applicable statute, regulation or written instruction issued by any competent governmental authority, after such noncompliance becomes actually or constructively known by any officer or director of the Insured or any employee with specific responsibility for environmental

   Possibly applicable

control. This exclusion shall not apply to any Environmental Impairment caused while the Insured's noncompliance is covered by a compliance schedule or program or waiver of compliance contained in a permit, order, or other valid instruction of a competent governmental authority.

5. Liability arising out of:

   (a) Any obligation for which the Insured or any carrier as his insurer may be held liable under worker's compensation, employee compensation or disability benefits law, or similar law;
   (b) Bodily Injury to any:
      (i) employee of the Insured
      (ii) employee of others contracting with or providing service to the Insured for which the Insured may otherwise be responsible

   arising out of and in the course of the employee's employment.

6. Any amount which the Insured may become obligated to pay for fines or penalties or equitable remedies including but not limited to injunctive or mandatory relief.

7. Environmental Impairment arising out of:

   (a) any product or products supplied, repaired, altered or treated by the Insured after the Insured has ceased to own or exercise physical control over that product or products;
   (b) any operations, installations, erections, repairs or treatments performed by the Insured for others after such operations, installations, erections, repairs or treatments have been completed.

8. Property Damage to or Clean Up within:

   (a) property owned or occupied by or rented to the Insured;
   (b) property used by the Insured;
   (c) property in the care, custody or control of the Insured or as to which the Insured is for any purpose exercising physical control. This exclusion does not apply to property while within or upon premises owned by or rented to the Insured for the parking of Automobiles.

'Processing' wouldn't [illegible] ? [illegible] or dumping [illegible] polluted!!! [illegible]

N.B.!

Environmental impairment & liability to cleaning outside the premises of the Insured – Parag 1 of Definitions ([illegible])

9. Environmental Impairment arising out of the ownership, maintenance, operation, use, loading or unloading of:

   (a) any Automobiles;
   (b) any vessel or craft (other than hand-propelled boats) made or intended to float on or in or travel through water, air or space;
   (c) any oil or gas drilling platform situated offshore;
   (d) any Deep Water Ports.

10. Environmental Impairment arising out of noise, vibration or sonic boom arising from the ownership, maintenance, possession, use or operation of airports or aircraft.

11. Environmental Impairment arising out of the deliberate and intentional dumping or disposal of toxic or radioactive substances into the open sea.

12. Environmental Impairment arising out of the Insured's failure to carry out clean up. This exclusion shall not apply unless the Insured is, actually or constructively, aware of the need for such clean up and the failure to carry out such clean up could reasonably be expected to give rise to claims covered by this Policy.

13. Liability for Environmental Impairment assumed by the Insured under any contract or agreement. This exclusion does not apply to liability that the Insured would have in the absence of such contract or agreement. In addition, this exclusion does not apply to

liability for environmental impairment assumed by the Insured under any contract or agreement which is listed on an endorsement to this Policy.

14. Any obligation for which the Insured or any carrier as his insurer may be held liable under the "Comprehensive Environmental Response, Compensation, and Liability Act of 1980," (U.S. Public Law 96-510) or any law amendatory thereof.

III. LIMITS OF LIABILITY AND RETAINED LIMIT

1. Limit of Liability - Regardless of the number of persons or entities insured hereunder, the liability of the Company for claims first made against the Insured during the Policy Period, (or within an extended Discovery Period, if that option is exercised by the Insured) is limited as follows:

    (a) the total liability of the Company for all payments due under this Policy for any one claim shall not exceed the amount stated in the Declaration as Limit of Liability -- Any One Claim.
    (b) notwithstanding the above, the total liability of the Company for all payments due under this Policy shall not exceed the amount stated in the Declaration as Limit of Liability — aggregate for each Policy period.

2. Retained Limit - The retained limit shall be applied to the total amount paid or payable by the Insured for legal liability, Cost and Expenses as provided in the Insuring Agreements for Any One Claim.

IV. DEFINITIONS

For the purpose of this Policy:

1. Environmental Impairment means any and all:

    (a) Bodily Injury;
    (b) Property Damage;
    (c) interference with or diminution of any environmental right or amenity protected by law;
    (d) liability to Clean Up outside the premises of the Insured;

    arising out of any and all emissions, discharges, dispersals, disposals, seepages, releases or escapes of any liquids, solids, gaseous, or thermal irritants into or upon land, the atmosphere or any water course or body of water or generations of smells, noises, vibrations, light, electricity, radiations, changes in temperature or any other sensory phenomena but not fire or explosion.

2. Clean Up means the removal, neutralization or inactivation of any substance.

3. Any One Claim means any claim or series of claims from one or multiple claimants arising out of the same Environmental Impairment or series of similar or related Environmental Impairments.

4. Claim First Made Against the Insured means a demand received by the Insured for monies or services, including the service of suit or institution of arbitration proceedings against the Insured.

5. Other Notice of Claim First Received by the Insured means the Insured becoming aware of any circumstances which could reasonably be expected to give rise to a claim for Environmental Impairment.

6. Bodily Injury means any injury in fact including bodily injury, mental anguish, shock, sickness, disease, disability, or death at any time resulting therefrom.

7. Property Damage means physical injury to or physical destruction of tangible property, including loss of use of tangible property whether or not physically injured or destroyed.

8. Automobile means a land motor vehicle, trailer or semitrailer including any machinery or apparatus attached thereto, designed for travel on public roads and subject to motor vehicle registration.

9. Deep Water Port means an installation having no structural connection with dry land, for charging and discharging vessels in the open sea.

10. Waste Facility means any facility, controlled or uncontrolled, used for the storage, treatment, processing or disposal of wastes including the parcel of land on or in which the facility is located together with any geographically contiguous parcels of land in common ownership.

11. Insured means the Insured stated in the Declarations, and:

    (a) any officer, director, stockholder, partner or employee of the Insured while acting in his capacity as such;
    (b) any organization or proprietor with respect to real estate management for the Insured;
    (c) the personal representatives of the Insured with respect to liability incurred by the Insured;

    However the inclusion or addition of more than one Insured shall not operate to increase the liability of the Company beyond the Limits of Liability stated in the Declarations. Each such Insured shall be subject, insofar as applicable, to all the Terms of this Policy.

12. Costs and Expenses shall include all costs and expenses of litigation, compromise, settlement, adjustment and investigation of claims.

13. Location(s) and Business of the Insured mean the Location(s) and the Business of the Insured designated in the Declaration and:

    (a) storage, treatment, processing or disposal of wastes, wherever such activity takes place;
    (b) provision and management of canteens, social, sports, and welfare organizations for the benefit of the Insured's employees and first aid, fire and ambulance services;

    provided that (a) and (b) arise in connection with the Location(s) and Business of the Insured designated in the Declarations.

V. CONDITIONS

1. One Contract - This Policy and Declarations shall be read together as one contract and any word or expression to which a specific meaning has been attached in any part of this Policy or of the Declarations shall bear such specific meaning wherever it may appear.

2. Company's Reliance on Representation - The statements made in the application or made as part of the survey as reflected in the survey report(s) are the Insured's agreements and representations and this Policy is issued in reliance upon the truth of such representations and embodies all agreements existing between the Insured and the Company or any of their agents relating to the Insurance.

3. Notice - The Insured shall promptly give written notice to the Company of any claim or proceedings relating to the Insurance provided by this Policy as soon as the same shall have come to the knowledge of the Insured.

4. **Company's Consent** - The Insured shall not, without the consent in writing of the Company, make any admission or negotiate any offer, promise or payment or carry out any Clean Up in connection with any claim covered by this Policy.

5. **Defense and Claims** - The Company shall be entitled, if it so desires, to take over and conduct, in the name of the Insured, the defense of any claim and shall have full discretion in the conduct of any proceedings and in the settlement of any Claim. The Insured shall give all such information and assistance as the Company may reasonably require.

6. **Prosecution of Claims** - The Company shall be entitled, if it so desires, to prosecute in the name of the Insured, at its own expense and for its own benefit, any claim for indemnity or damages or otherwise against any persons. The Insured shall give all such information and assistance as the Company may reasonably require.

7. **Subrogation** - In the event of any payment under this Policy, the Company shall be subrogated to all the Insured's rights of recovery against any person or organization and the Insured shall give all such information and assistance as the Company may reasonably require to secure such rights.

8. **Inspection of Records** - If the premium for this Policy has been calculated on any estimates furnished by the Insured, the Insured shall keep an accurate record containing all particulars relative thereto and shall at all times allow the Company to inspect such records.

9. **Premium Adjustment** - If the premium for this Policy is adjustable, the Insured shall, within 90 days from the expiration of each policy period (or each anniversary date when this Policy is written for more than one year) or within such other period as may have been agreed to in writing, furnish to the Company such particulars and information as the Company may required. The premium for such period shall thereupon be adjusted and difference paid by or allowed to the Insured, as the case may be.

10. **Notice of Material Change in the Risk** - If, any change shall occur materially varying any of the statements made in the application or as part of the survey, or if the insured shall receive information indicating a material increase in the risks to which this Policy relates, the Insured shall, within thirty (30) days of such change of information becoming known, give notice of such change in writing to the Company.

11. **Inspection** - The Company or its representative shall at all reasonable times have free access to inspect any Locations stated in the Declarations or any records relating thereto. Neither the rights of the Company or any other person or organization to make such inspections nor the making thereof nor any report thereon shall constitute an undertaking on behalf of or for the benefit of the Insured or others to determine or warrant that such property is safe or in compliance with any law, rule or regulation.

12. **Suspension** - In the event of any defect or danger being apparent to the Company which the Insured can reasonably be expected to correct or minimize, the Company, without prejudice to the provisions of Exclusion 4, may give notice in writing to the Insured, and if the Insured fails to take reasonable and necessary action, in a timely and proper manner, to correct or minimize such defect or danger, all liability to the Company in respect of such defect or danger or arising therefrom shall be suspended.

13. **Cancellation** - This policy may be canceled by the Named Insured by mailing to the Insurer written notice stating when thereafter the cancellation shall be effective. This policy may be canceled by the Insurer by written notice to the Named Insured at the address shown in this Policy, such notice to be not less than the number of days set forth in the Declarations or 10 days for non-payment of premium. The mailing of notice as aforesaid shall be sufficient proof of notice. The effective date and hour of cancellation stated in the notice shall become the end of the Policy Period. Delivery of such written notice either by the Named Insured or by the Insured or by the Insurer shall be equivalent to mailing. If the named Insured cancels, earned premium shall be computed in accordance

with the customary short rate table and procedure, but shall not be less than the Retained Premium described in the Declarations hereto. If the Insurer cancels, earned premium shall be computed pro rata. Premium adjustment may be made either at the time cancellation is effected or as soon as practicable after cancellation becomes effective, but payment or tender of unearned premium is not a condition of cancellation.

14. One Insured - If this Policy insures more than one Insured, the first Insured listed in the Declarations is assigned the rights and duties of all other Insureds under this Policy. Cancellation may be effected by the first Insured listed in the Declarations for the account of all Insureds and notice of cancellation by the Company to the first Insured listed in the Declarations shall be deemed notice to all Insureds.

15. Arbitration - If there is no judicial or administrative determination by competent governmental authority as to:

(a) the Insured's ascertained contribution in cases of "joint and several" liability as referred to in Insuring Agreement 2;
(b) the apportionment of damages to the covered portion of any claim when combined with an uncovered portion; or
(c) whether two or more Environmental Impairments are substantially similar or related.

The Insured and the Company will either mutually agree such determination or submit such determination to arbitration to be conducted by the Arbitrators Institute of Canada.

16. Other Insurance - This Policy shall not be called upon in contribution and no liability shall attach hereunder for any injury, loss, damage, or Costs and Expenses recoverable under any other insurance, whether primary or excess, inuring to the benefit of the Insured except as regards any excess over and above the amounts collectible under such other insurance. This clause shall not apply to any policy that is specifically arranged by the Insured to cover limits in excess of those stated in this Policy. Nothing herein shall be construed to make this Policy subject to the terms, conditions and limitations of any other insurance.

17. Prior Insurance and Non Cumulation of Liability - If any loss covered hereunder is also covered in whole or in part under any other Policy issued to the Insured prior to the inception date hereof, the limit of liability hereon as stated in the Declarations shall be in excess of any amounts due to the Insured on account of such loss under such prior insurance.

18. Assignment - Assignment of interest under this Policy shall not bind the Company unless its consent is given in writing.

19. Action Against the Company - No action shall lie against the Company unless as a condition precedent thereto there shall have been full compliance with all terms and conditions of this Policy.

20. Improvements and Betterments - In the event of any Clean Up undertaken by the Insured and subject to the provisions of this Policy, the Company's liability shall not exceed the minimum cost of compliance with any order, rule, regulation, or written instruction of the governmental authority requiring such Clean Up.

21. Salvage or Recoveries - In the event of any salvage or recovery, the value of such salvage or recovery shall be deducted from the amount payable under this Policy.

22. Abandonment - The Insured shall in no event be entitled to abandon any property to the Company.

VI. SUBSCRIPTION AGREEMENT

In consideration of the Insured having undertaken to pay to each of the Companies named in the List of Subscribing Companies forming part hereof, or to Companies whose names are substituted therefor or added thereto by Endorsement, hereinafter called "The Company" its proportion of the agreed premium as set forth elsewhere, the Companies severally and not jointly agree, each for its proportion shown hereunder, to indemnify the Insured in accordance with the Terms and Conditions contained herein or endorsed hereon.

It is understood and agreed that the liability of the Companies individually shall be limited to the said Proportion of the Limits of Liability shown elsewhere herein, and to the same Proportion of any Loss, claim or expense paid of payable hereunder.

Wherever in this Policy or in any Endorsement attached thereto reference is made to "The Company" reference shall be deemed to be made to each of the Companies severally.

IN WITNESS WHEREOF THE COMPANIES, through their representative duly authorized by them for this purpose, have executed and signed this Policy.

LIST OF SUBSCRIBING COMPANIES

COMPANY	PROPORTION	LIMIT	PREMIUM
General Accident Assurance Company of Canada Toronto, Ontario	26.0%	$ 520,000.00	6,916.00
Royal Insurance Company of Canada Toronto, Ontario	31.5%	$ 630,000.00	8,379.00
Simcoe & Erie General Insurance Company Hamilton, Ontario	15 %	$ 300,000.00	3,990.00
Scottish & York Insurance Co. Limited Toronto, Ontario	17.5%	$ 350,000.00	4,655.00
Canadian General Insurance Company Toronto, Ontario	10 %	$ 200,000.00	2,660.00
	100 %	$2,000,000.00	26,600.00

NUCLEAR ENERGY LIABILITY EXCLUSION

It is agreed that this Policy does not apply:

(a) to liability imposed by or arising under the Nuclear Liability Act; nor
(b) to Environmental Impairment with respect to which an Insured under this policy is also insured under a contract of nuclear energy liability insurance (whether the Insured is unnamed in such contract and whether or not it is legally enforceable by the Insured) issued by the Nuclear Insurance Association of Canada or any other Insurer or group or pool of Insurers or would be an Insured under any such policy but for its termination upon exhaustion of its limit of liability; nor
(c) to Environmental Impairment resulting directly or indirectly from the nuclear energy hazard arising from:

(i) the ownership, maintenance, operation or use of a nuclear facility by or on behalf of an Insured;

(ii) the furnishing by an Insured of services, materials, parts or equipment in connection with the planning, construction, maintenance, operation or use of any nuclear facility; and

(iii) the possession, consumption, use, handling, disposal or transportation of fissionable substances, or of other radioactive material (except radioactive isotopes, away from a nuclear facility, which have reached the final stage of fabrication so as to be useable for any scientific, medical, agricultural, commercial or industrial purpose) used, distributed, handled or sold by an Insured.

As used in this Policy:

1. The term "nuclear energy hazard" means the radioactive, toxic, explosive, or other hazardous properties of radioactive material;

2. The term "radioactive material" means uranium, thorium, plutonium, neptunium, their respective derivatives and compounds, radioactive isotopes of other elements and any other substances that the Atomic Energy Control Board may, by regulation, designate as being prescribed substances capable of releasing atomic energy, or as being requisite for the production, use or application of atomic energy;

3. The term "nuclear facility" means:
   (a) any apparatus designed or used to sustain nuclear fission in a self-supporting chain reaction or to contain a critical mass of plutonium, thorium and uranium or any one or more of them;
   (b) any equipment or device designed or used for
      (i) separating the isotopes of plutonium, thorium and uranium or any one or more of them,
      (ii) processing or utilizing spent fuel, or
      (iii) handling, processing, or packaging waste;
   (c) any equipment or device used for the processing, fabricating or alloying of plutonium, thorium or uranium enriched in the isotope uranium 233 or in the isotope uranium 235, or any one or more of them if at any time the total amount of such material in the custody of the Insured at the premises where such equipment or device is located consists of or contains more than 25 grams of plutonium or uranium 233 or any combination thereof, or more than 250 grams of uranium 235;
   (d) any structure, basin, excavation, premises or place prepared or used for the storage or disposal of waste radioactive material; and includes the site on which any of the foregoing is located, together with all operations conducted thereon and all premises used for such operations.

4. The term "fissionable substance" means any prescribed substance that is, or from which can be obtained, a substance capable of releasing atomic energy by nuclear fission.

ENDORSEMENT NUMBER: 1

POLICY NUMBER:

INSURED:

OPERATIONAL COVERAGE ENDORSEMENT

It is agreed that the coverage of this policy is extended to the following operations of the Insured, at job sites located away from the scheduled locations:

1) Transportation and handling of small quantities of hazardous wastes.
2) The handling and treatment of used filter elements.
3) The collection, cleaning, and disposal of drums.

In connection with this extension of coverage, it is agreed that the following restrictions will apply:

1) It is agreed that liability arising out of pre-existing conditions at the sites involved is excluded from the coverage of the policy. The coverage is restricted to liability arising out of operations of the Insured and not out of contamination caused by others before the Insured arrives at the job site covered.

2) It is agreed that there is no coverage under this policy for liability arising out of the failure of the Named Insured to adequately decontaminate at the job sites covered or for liability arising out of inadequately decontaminated substances left on the site.

3) It is agreed that this policy will not apply to or include liability arising out of the operation of the proposed incinerator to be installed in the scheduled location.

All other terms and conditions remain unchanged.

IN WITNESS WHEREOF, the Insurer has caused this Endorsement to be signed by an Authorized Representative.

Ian Elliott Limited
Montreal · Toronto

EIL6
871105

Gouvernement du Québec
Bureau d'audiences publiques
sur l'environnement
Commission d'enquête sur les déchets dangereux

PRINCIPALES ORIENTATIONS PROPOSÉES PAR LA COMMISSION D'ENQUÊTE SUR LES DÉCHETS DANGEREUX

Allocution de Monsieur Yvon Charbonneau
président de la
Commission d'enquête sur les déchets dangereux

devant le 6^e^ colloque des Affaires gouvernementales
canadiennes sur l'environnement

Ottawa, le 24 octobre 1990

5199, rue Sherbrooke est
Bureau 4500
Montréal (Québec) H1T 3X9

Téléphone: (514) 873-3692
Télécopieur: (514) 873-8668

Mesdames,
Messieurs,

Le 14 septembre, la Commission d'enquête sur les déchets dangereux, que j'ai eu l'honneur de présider, transmettait son rapport final au ministre de l'Environnement du Québec, Monsieur Pierre Paradis. Il m'est agréable de vous livrer les grandes lignes de ce rapport.

D'entrée de jeu, je puis affirmer qu'à notre avis une prise en main de nos déchets dangereux est possible au cours des cinq prochaines années et cela à un prix accessible. A la condition que l'effort politique soit fait, en conjonction avec les forces du milieu, dans un esprit de transparence et d'équité.

Mais d'abord, quelques mots sur la démarche suivie par la Commission. C'est le 19 décembre 1988 que le ministre de l'Environnement confiait au Bureau d'audiences publiques sur l'environnement (BAPE) le mandat de «tenir une enquête sur les problèmes et les solutions de l'élimination des déchets dangereux au Québec». L'équipe qui a effectivement réalisé l'enquête a été constituée à compter de mai 1989. Elle a commencé ses travaux au mois de juillet suivant.

En 15 mois, nous avons effectué deux tournées du Québec, tenu une consultation à l'intention des autochtones, conduit un programme de recherche et produit trois documents substantiels, dont le rapport final; nous avons visité plusieurs entreprises associées à la production et au traitement des déchets dangereux au Québec, dans les autres provinces, aux Etats-Unis et en Europe; nous avons rencontré des centaines de personnes et de représentants d'entreprises ou d'organismes susceptibles d'aider à la définition des problèmes et des solutions. Ce rapport est le fruit de notre réflexion enrichie de contributions provenant de tous les secteurs de la société.

Déficit de la gestion des déchets dangereux

Pour mesurer l'ampleur du problème à résoudre, il nous faut donner quelques chiffres. La Commission évalue la production totale de déchets dangereux au Québec à 1 300 000 tonnes par année, dont 780 000 sont gérées sur leur site de production. Aux 520 000 tonnes qui quittent leur lieu de production s'ajoutent les importations de 106 000 tonnes, pour un total de 626 000 tonnes par année à prendre en charge.

Si on soustrait de ces 626 000 tonnes les quantités exportées (86 000), celles qui sont stabilisées et enfouies chez Stablex (96 000), les quantités incinérées chez Laidlaw (45 000) et celles qui sont acheminées chez les recycleurs (31 000), il reste 368 000 tonnes par année de déchets dangereux qui sont gérés hors de leur lieu de production on ne sait trop comment. Ils peuvent faire l'objet d'entreposage légal ou non, de déversements dans la nature ou encore d'exportation illégale. C'est ce déficit de gestion des déchets dangereux qui devrait être pris en charge. A cela il faut ajouter les BPC, les pneus hors d'usage, les huiles usées et les sols contaminés qui ne sont pas inclus dans ce bilan.

Les principes d'intervention

En accord avec la très grande majorité des intervenants en audience publique, la Commission est d'avis que les politiques de prise en charge des déchets dangereux devraient reposer sur les principes suivants:

- la conservation et le développement durable
- la santé publique et la sécurité environnementale
- le droit de la population à la participation

. et le «pollueur-payeur».

Les objectifs que nous avons proposés, et qui sont le fondement de nos recommandations, ont aussi été largement supportés par les participants à la consultation. Ces objectifs, présentés en ordre de priorité, ont pour caractéristique de diminuer la quantité de déchets à prendre en charge à l'étape suivante. Ce sont, dans l'ordre:

1° la réduction à la source de la production de déchets dangereux;
2° l'extension du recyclage au domaine des déchets dangereux;
3° la valorisation énergétique;
4° le traitement de la portion résiduelle de déchets dangereux pour en réduire la nocivité ou le volume;
5° le dépôt définitif et contrôlé après stabilisation et neutralisation.

En conformité avec ces objectifs, notre rapport présente 153 recommandations touchant les dimensions techniques, économiques, juridiques, sociales et institutionnelles de la question. Certaines de ces recommandations, inspirées par les suggestions de nos interlocuteurs, sont d'un intérêt environnemental plus large que la stricte question des déchets dangereux. La Commission a tenu à y faire écho dans son rapport (chapitre 7) et à les acheminer aux autorités politiques responsables. Dans le cadre de cette conférence je m'en tiendrai à vous donner un bref aperçu des principales recommandations touchant la prise en charge des déchets dangereux.

Scénario proposé

Pour réduire de façon substantielle le déficit de prise en charge des déchets dangereux et parvenir à une reprise en main de la situation pour 1996, nous avons élaboré un scénario combinant plusieurs niveaux d'intervention ou de choix. Ce scénario prévoit et quantifie dans la mesure du possible les accumulations en inventaire, les efforts de réduction, de recyclage et de valorisation ainsi que l'ajout de nouveaux équipements.

Précisons que les quantités reconnues de déchets dangereux augmenteront au cours des prochaines années en raison de projets en cours tels que l'application du Programme de réduction des rejets industriels (PRRI) et le désencrage du papier. D'autres catégories de déchets dont nous recommandons la prise en charge, tels que les huiles usées, les déchets domestiques dangereux, les poteaux traités mis au rebut et les déchets de pesticides, viendront aussi augmenter le déficit de gestion. Celui-ci, selon nos estimations, atteindra 558 000 tonnes en 1991 et, si aucun équipement nouveau n'était mis en place, il atteindrait 618 000 tonnes en 1996.

Au cours de la même période, nous estimons que les performances de réduction et de recyclage devraient être multipliées par 8 et atteindre 25% des déchets produits, réduisant d'autant le déficit. Nous préconisons divers moyens d'ordre réglementaire et économique pour favoriser ces nouvelles pratiques.

Pour permettre d'atteindre ces objectifs, le parc d'équipements devrait être renforcé pour se stabiliser à compter de 1996. Selon nous, ce parc d'équipements devrait être constitué de la façon suivante:

- des réseaux de collecte et de transport généraux dans toutes les régions du Québec et des réseaux spécialisés complémentaires pour certaines catégories de déchets provenant de secteurs industriels particuliers;

- un réseau de centres de transfert devant desservir tout le territoire québécois;

- des équipements de recyclage permettant de faire augmenter les volumes de réduction et de recyclage de 30 000 t/an actuellement à environ 240 000 t en 1996;

- une usine de reraffinage des huiles usées d'une capacité de 80 000 t/an;

- le recours à des installations industrielles de grande capacité thermique, notamment les cimenteries, pour porter à 106 000 t/an la valorisation qui, présentement, ne touche que 18 000 t/an.

- Pour le traitement des déchets inorganiques, sous réserve d'une évaluation rigoureuse du procédé, il faudra envisager de porter la capacité de Stablex à 150 000 tonnes en 1992 et à 200 000 tonnes en 1993; il faudra de plus implanter un autre centre de traitement d'une capacité de 75 000 tonnes par année à compter de 1993.

- Pour le traitement des déchets organiques, en priorité pour les déchets de BPC et pour les les déchets produits en petites quantités dans les régions périphériques, il faudra prévoir l'entrée en activité d'incinérateurs mobiles d'une capacité de 10 000 tonnes en 1992, cette capacité atteignant 20 000 tonnes en 1994. A compter de 1993, sous réserve d'une évaluation des techniques utilisées, il faudra envisager de porter la capacité de Laidlaw à 90 000 tonnes (soit le double de sa capacité actuelle) et disposer d'une capacité d'incinération additionnelle de 80 000 tonnes.

La question de l'incinération mérite quelques précisions. D'abord, je tiens à rappeler que la Commission ne retient cette option qu'une fois exploitées à fond les possibilités de réduction, de recyclage et de valorisation. Des efforts devront aussi être faits en matière de recherche et de développement dans des technologies de remplacement. Par ailleurs, la Commission n'a pas acquiescé à la suggestion d'entreposer à long terme les déchets dangereux en attendant des procédés qui excluent toute incinération. A l'instar de certains intervenants spécialisés, la Commission est d'avis que cette approche ferait supporter aux populations vivant à proximité des grands entrepôts de déchets volatiles et inflammables des risques qui pourraient devenir plus importants que ceux qui sont liés à une incinération exercée dans des conditions de contrôle très rigoureuses. A ce sujet, nous proposons des normes réglementaires plus sévères pour ce qui est des émissions atmosphériques des incinérateurs. De plus, étant donné les craintes de la population quant aux risques de l'incinération, nous sommes d'avis que des évaluations publiques des conséquences de tels projets devront être conduites dans tous les cas.

Pour compléter notre scénario, nous prévoyons que les importations et les exportations s'équilibreront d'ici 5 ans, puis que leur niveau diminuera graduellement au cours des 10 années suivantes. Sur la question des mouvements transfrontaliers, sans préconiser l'autarcie complète, nous sommes d'avis que le Québec devrait tendre à l'autosuffisance en matière d'équipements de traitement des déchets dangereux et éviter que les importations ne deviennent le prétexte pour un sur-équipement.

Enfin, étant donné les quantités importantes de déchets maintenues en inventaire d'ici à 1996, nous croyons que le ministère de l'Environnement et les entreprises visées devraient mettre au point un programme de gestion des inventaires pour cette période, comprenant par exemple la mise en commun de capacités d'entreposage sécuritaire.

Le tout devrait permettre de réduire à 40 000 tonnes par année, à compter de 1996, le déficit de gestion des déchets dangereux, soit l'équivalent des quantités qui pourraient encore échapper aux réseaux de collecte.

Renforcement de la législation

Sur un autre plan, plusieurs témoignages nous ont convaincus que les lois et les règlements encadrant la gestion des déchets dangereux souffraient de lacunes importantes. Après une analyse de la législation pertinente, il ne nous a pas semblé opportun de regrouper tous les déchets dangereux sous le chapeau du «Règlement sur les déchets dangereux». Nous visons plutôt à ce que tous les déchets qui comportent des dangers soient pris en charge par une réglementation bien identifiée et renforcée au besoin, dans une logique qui accorde priorité à la réduction, au recyclage et à la valorisation.

Dans cet esprit, la Commission recommande plusieurs mesures juridiques; je n'en mentionnerai que quelques-unes touchant des problèmes qui ont été soulevés par plusieurs participants à la consultation.

Ainsi, nous recommandons

- que soient mis en vigueur les paragraphes g), n) et p) ainsi que le deuxième alinéa du paragraphe j) du «Règlement sur l'évaluation et l'examen des impacts sur l'environne-ment», afin de soumettre aux évaluations environnementales publiques les grands projets industriels qui produisent des déchets dangereux;

- que tout projet d'implantation ou de modification d'équipements ou d'installation de gestion de déchets dangereux soit obligatoirement soumis à la procédure d'évaluation environnementale de la «Loi sur la qualité de l'environnement»;

- et que le Programme de réduction des rejets industriels (PRRI) soit modifié pour inclure les déchets dangereux dans son champ d'application.

Nous proposons certaines modifications au «Règlement sur les déchets dangereux», notamment l'introduction d'une définition et d'une liste de déchets dangereux recyclables ainsi qu'un régime administratif particulier favorisant leur recyclage, sans mettre en cause la santé publique et la sécurité environnementale.

Pour répondre plus efficacement aux besoins des producteurs de petites quantités de déchets dangereux, nous proposons que l'exclusion du règlement des quantités inférieures à 5 kg par mois soit remplacée par une application du règlement en fonction de seuils établis d'après la toxicité de chaque déchet.

Nous recommandons que les dispositions du «Règlement sur les déchets dangereux» soient appliquées à l'entreposage des brasques des alumineries.

Nous proposons que le «Règlement sur les fabriques de pâtes et papiers» soit modifié de façon à y introduire un régime de gestion sûre et contrôlée des déchets et de leur dépôt définitif.

Nous recommandons aussi l'adoption de nouveaux règlements notamment:

- pour une gestion des résidus miniers protégeant l'environnement, incluant les dispositions pertinentes à la prise en charge des effluents des mines et des parcs à résidus miniers;

- pour la gestion des boues d'épuration des eaux usées municipales, une attention spéciale devant être portée à la sécurité des techniques de valorisation et de dépôt définitif;

- pour la gestion des déchets biomédicaux infectieux, les autres types de déchets biomédicaux devant être couverts par le «Règlement sur les déchets dangereux»;

- et pour assurer la prise en charge des pneus hors d'usage, de la collecte au traitement.

En ce qui a trait aux sols contaminés, nous demandons la mise en vigueur des articles de la «Loi sur la qualité de l'environnement» portant sur la décontamination et la restauration de l'environnement.

Des mesures institutionnelles

Sur le plan institutionnel, la Commission est d'avis que les attributions du ministère de l'Environnement devraient être recentrées sur ses fonctions politiques et gouvernementales, soit la connaissance de la situation, l'élaboration des politiques, la réglementation, la planification ainsi que l'animation du milieu.

Afin de renforcer la contrôle exercé par le ministère de l'Environnement, nous recommandons la création d'une Régie des déchets dangereux, organisme de régulation qui se verrait confier l'administration du «Règlement sur les déchets dangereux» et des autres règlements régissant des déchets assimilables aux déchets dangereux. Cet organisme aurait plus particulièrement en pouvoirs d'émettre des certificats d'autorisation aux exploitants du système de prise en charge, d'encadrer la tarification des services, de procéder à des inspections, de recevoir des plaintes et d'enquêter, de tenir des audiences publiques et de percevoir une redevance sur les déchets dangereux pris en charge par le système.

Par la tenue d'audiences publiques et par le rapport annuel qu'elle serait tenue de faire à l'Assemblée nationale, cette régie nous apparaîtrait de nature à assurer la transparence et la cohérence nécessaires au bon fonctionnement du système proposé.

La Commission recommande en outre que de nouveaux mandats soient attribués à des sociétés existantes, soit la Société RECYC créée par la Loi 60 en juin 1990 et la Société québécoise d'assainissement des eaux (SQAE). La première pourrait développer les technologies et les marchés du recyclage et de la valorisation des déchets industriels et dangereux; la seconde pourrait assumer des responsabilités telles que la gestion des boues d'épuration des eaux usées, la réhabilitation des sites contaminés et la sécurité des sites de gestion des déchets dangereux après leur fermeture.

Nous recommandons enfin que soient créées des sociétés régionales de gestion des déchets dangereux responsables de la mise en oeuvre des activités de collecte, de transport et de transfert à l'échelle régionale. Pour ce faire, elles auraient toute la latitude pour s'associer ou conclure des ententes avec les entreprises privées oeuvrant en ce domaine sur leurs territoires.

On aura sans doute remarqué que la Commission ne propose pas de société publique centrale de gestion des déchets dangereux. La Commission croit en effet que le secteur privé a sa place à toutes les étapes du système de prise en charge. La Commission fait appel à ces entreprises afin qu'elles assurent un service de qualité, accessible de façon équitable et à un coût raisonnable à l'ensemble des régions et des entreprises productrices de déchets dangereux, et estime que si la Régie et les sociétés régionales sont instituées et jouent leur rôle il ne sera pas nécessaire de prévoir une intervention plus explicite de l'État dans ce domaine.

Un redressement financièrement accessible

Pour financer la prise en charge des déchets dangereux tout en favorisant la réduction des quantités produites, la Commission recommande la création d'un fonds spécial du ministère de l'Environnement. Ce fonds de 35 millions de dollars par année servirait à financer les activités de la Régie, les nouveaux mandats confiés à la RECYC et à la SQAE, l'aide à la recherche et au développement, les subventions de péréquation aux sociétés régionales et le soutien financier aux groupes environnementaux. Il serait assuré, à parts égales, par deux sources: le budget de base du MENVIQ et une redevance imposée aux producteurs de déchets dangereux. Cette redevance serait proportionnelle à la production et incitative au recyclage, à la valorisation et à la prise en charge correcte des déchets dangereux.

Le vaste problème de la restauration des sites contaminés dans le passé nécessite une approche distincte, puisqu'il s'agit de répartir aujourd'hui, de la façon la plus équitable possible, les coûts que d'autres personnes physiques ou morales auraient dû assumer il y a 10, 20 ou 50 ans. A cette fin, nous recommandons que les coûts, évalués à 110 millions par année pendant 10 ans, soient répartis entre les parties responsables (65 %) et le Fonds de réhabilitation des sites contaminés (35 %). Ce fonds public que nous recommandons de constituer serait lui-même financé par un prélèvement sur les revenus de l'imposition des sociétés (25 millions $/an) et par les revenus généraux de l'Etat (fédéral et provincial) (13,5 millions $/an).

Selon nous, l'effort ainsi demandé demeurerait tout à fait acceptable en comparaison de ce qu'ont coûté d'autres équipements collectifs et certains accidents environnementaux récents.

Des actions immédiates

En vue de l'adoption d'un plan de gestion des déchets dangereux, nous recommandons au ministre de l'Environnement de constituer un comité du suivi pour arrêter le choix des technologies, des équipements et des sites à retenir, sur la base de nos travaux. Nous recommandons également un processus de validation des techniques, d'évaluation environnementale et technologique des procédés de traitement, et d'audience publique sur l'ensemble des éléments du plan de gestion.

Un calendrier serré de réalisation des diverses mesures que nous proposons indique que leur mise en oeuvre ne commencera à se concrétiser qu'à compter de 1992 et surtout en 1993, au moment où le nouveau parc d'équipements entrera en fonction. Cependant, certains problèmes, dont les déchets contaminés aux BPC, les huiles usées et les lieux contaminés, requièrent des interventions plus immédiates.

Au sujet des BPC, nous privilégions un arrimage avec le programme fédéral et la validation par le ministère de l'Environnement du Québec des tests déjà conduits sur les technologies mobiles d'incinération de déchets de BPC. Nous suggérons que le Ministère s'entende avec Hydro-Québec pour que ses terrains puissent servir à l'entreposage temporaire de petites quantités de BPC et recevoir les unités mobiles d'incinération. Ces démarches ainsi que l'étude d'impact relative aux sites envisagés pourraient être réalisées d'ici le ler mars 1991. Le BAPE pourrait tenir une audience publique itinérante de mars à juin sur cette question particulière, de telle sorte que les unités de traitement pourraient fonctionner vers la fin de 1991 et disposer des déchets de BPC accumulés dans le cours de 1992.

En ce qui a trait aux huiles usées, étant donné les volumes en cause et le sous-équipement actuel, nous recommandons une action rapide visant l'implantation d'une usine de reraffinage, ce qui exige l'existence d'un marché pour les huiles régénérées. A ces fins, nous suggérons qu'un mandat soit donné à la société RECYC, en collaboration avec l'Association pétrolière et l'industrie automobile, de convenir d'un mode de collecte de telles huiles et d'entreprendre une campagne d'information visant la préparation d'un marché pour les huiles reraffinées. Dès le début de 1991, une consultation publique sous les auspices du BAPE pourrait porter sur le ou les projets d'usine de reraffinage, permettant l'amorce d'une solution à la fin de 1991 ou en 1992.

Quant au dossier des sites contaminés, le gouvernement doit mettre en vigueur tous les articles de la Loi 65 adoptée en juin 1990 et la réglementation qui en découle. Cette réglementation devrait prévoir que les sols contaminés correspondant à la définition d'un déchet dangereux seront régis par des dispositions similaires à celles qui sont prévues au «Règlement des déchets dangereux». Si le mandat de la décontamination des sites est confié à la Société québécoise d'assainissement des eaux, sa mise en oeuvre pourrait commencer dès les premiers mois de 1991 par l'établissement des priorités en matière de sites à décontaminer. Pour accélérer le programme de réhabilitation des sites contaminés, nous suggérons d'accréditer le plus tôt possible des techniques de traitement sur le site et au besoin d'autoriser un centre d'entreposage temporaire des sols contaminés.

Anticipation, leadership, transparence

Au cours de cet exercice, exigeant mais combien stimulant, nous avons acquis la conviction que la société québécoise peut maîtriser le problème des déchets dangereux à court terme et que l'effort financier nécessaire est à la portée de nos moyens.

Le système que nous proposons, à l'enseigne d'une gestion environnementale des déchets dangereux, vise à organiser en un tout cohérent, transparent et efficace un ensemble d'éléments partiellement en place et fonctionnant sans véritable organisation ni coordination.

Pour y parvenir, l'information du public et des secteurs principalement concernés doit être améliorée; il faut passer d'une gestion au coup-par-coup à une stratégie d'action basée sur l'anticipation et la prévention. L'action de vigilance est plus efficace et moins coûteuse que l'action de réparation. La concertation du milieu est possible, et le partenariat indispensable; cependant la transparence et l'ouverture d'esprit devront être au rendez-vous.

Le point d'arrivée de cette Commission peut être le nouveau point de départ de la stratégie québécoise de gestion des déchets dangereux. Le premier obstacle à lever consiste à se débarrasser de l'idée selon laquelle l'environnement est tenu pour gratuit, et que sa gestion peut être confiée sans dommage aux bons soins de la main invisible du marché et du laisser-aller. La prospérité comporte ses scories : il faut avoir le courage de se le dire sans hypocrisie ni catastrophisme.

En résumé, les convictions profondes qui ont guidé notre Commission dans l'élaboration de sa proposition de gestion environnementale des déchets dangereux sont les suivantes :

- l'information du public et des secteurs principalement concernés doit être améliorée;

- il faut passer d'une gestion au coup-par-coup à une stratégie d'action basée sur l'anticipation et la prévention;

- la concertation du milieu est possible, et le partenariat indispensable; cependant la transparence et l'ouverture d'esprit devront être au rendez-vous;

- une politique efficace de gestion environnementale des déchets dangereux doit être rapprochée de la source des problèmes. L'action de vigilance est plus efficace et moins coûteuse que l'action de réparation;

- le palier politique doit donner le signal du nouveau départ : les attentes sont grandes, les offres de collaboration sont présentes, le consensus social est accessible. A condition d'y mettre de la détermination, de la continuité et des moyens à la hauteur du problème.

Nous en arrivons au point où responsabilité éthique et responsabilité politique se confondent et se conjugent : un nouveau pacte environnemental s'impose.

Il est urgent d'agir maintenant. Demain il en coûtera davantage. Après-demain, il pourrait bien être trop tard.

Figure extraite de la page 23 du document final

Figure 1 Problématique des déchets dangereux au Québec: situation en 1988

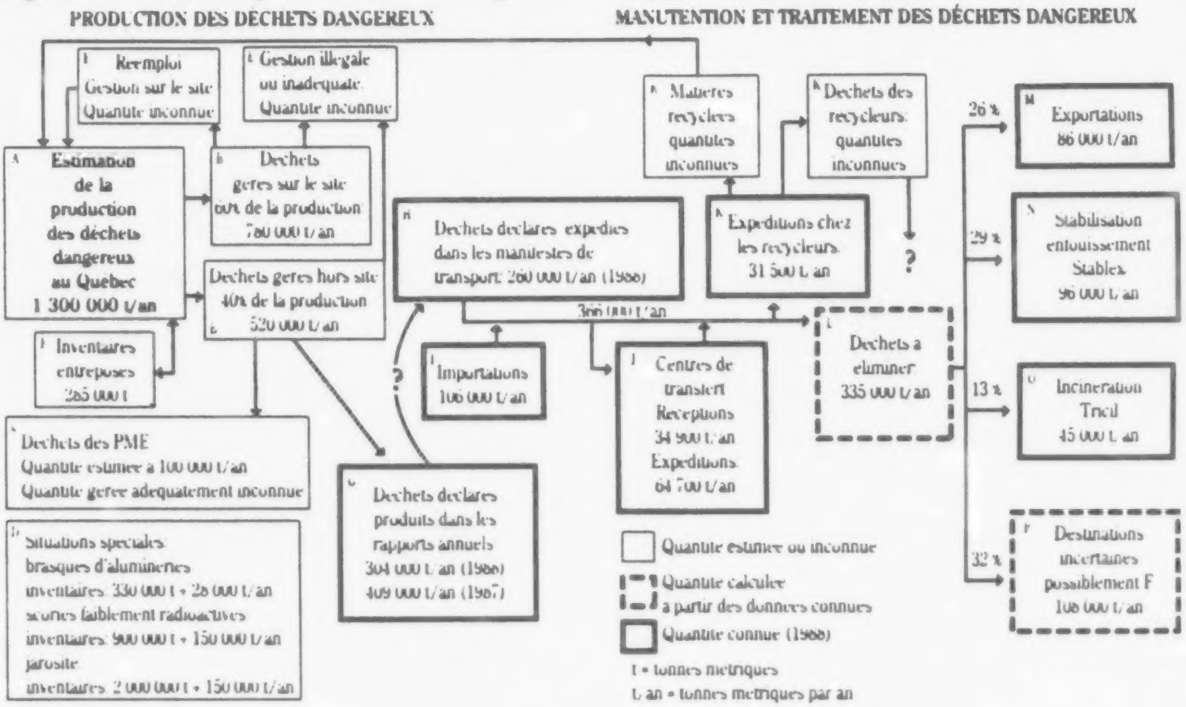

PRODUCTION DES DECHETS DANGEREUX
MANUTENTION ET TRAITEMENT DES DÉCHETS DANGEREUX
Reemploi Gestion sur le site Quantite inconnue
Gestion illegale ou inadequate Quantite inconnue
A Estimation de la production des déchets dangereux au Quebec 1 300 000 t/an
Dechets geres sur le site 60% de la production 780 000 t/an
Dechets geres hors site 40% de la production 520 000 t/an
Inventaires entreposes 285 000 t
Dechets des PME Quantite estimee a 100 000 t/an Quantite geree adequatement inconnue
Situations speciales: brasques d'alumineries inventaires: 330 000 t + 28 000 t/an scories faiblement radioactives inventaires: 900 000 t + 150 000 t/an jarosite inventaires: 2 000 000 t + 150 000 t/an
Dechets declares expedies dans les manifestes de transport: 260 000 t/an (1988)
366 000 t/an
?
Importations 106 000 t/an
Dechets declares produits dans les rapports annuels 304 000 t/an (1988) 409 000 t/an (1987)
Matieres recyclees quantites inconnues
Dechets des recycleurs: quantites inconnues
Expeditions chez les recycleurs 31 500 t/an
?
Centres de transfert Receptions 34 900 t/an Expeditions 64 700 t/an
Dechets a eliminer 335 000 t/an
26 %
M Exportations 86 000 t/an
29 %
Stabilisation enfouissement Stablex 96 000 t/an
13 %
Incineration Tricil 45 000 t/an
32 %
P Destinations incertaines possiblement F 108 000 t/an
Quantite estimee ou inconnue
Quantite calculee a partir des donnees connues
Quantite connue (1988)
t = tonnes metriques
t/an = tonnes metriques par an

Tableau extrait de la page 351 du document final

Tableau 61
Scénario proposé 1991-1996

Interventions et choix		1991	1992	1993	1994	1995	1996
Réduction, recyclage, réemploi		30	40	78	127	181	238
Valorisation		18	50	52	73	92	106
Ajout annuel d'équipement de	I	0	50	125	0	9	0
traitement par rapport à 1990	O	0	10	130	5	5	0
Inventaire (1990:285)		400	501	401	344	324	337
Déficit de gestion		443	381	309	220	130	40

O = Organique   I = Inorganique   (en milliers de tonnes)

Il faut retenir de ce scénario quatre éléments.

1° Les quantités prises en charge par les efforts de réduction et les équipements de recyclage et de valorisation augmentent substantiellement.

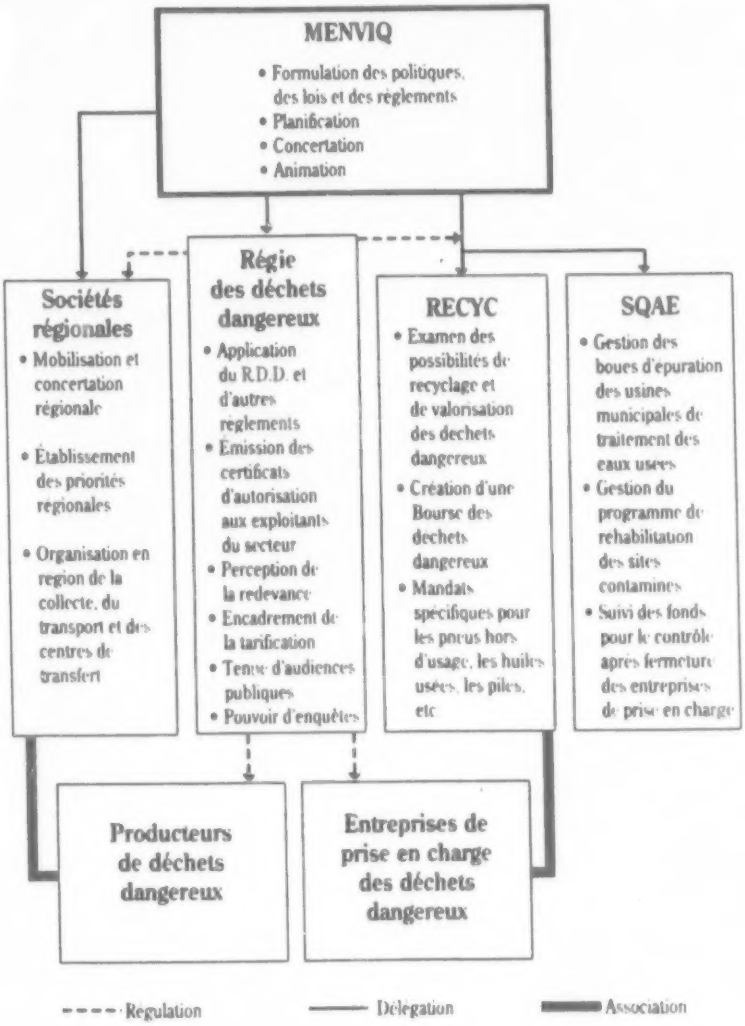
2° Les équipements entrent graduellement en fonction à compter de 1992, et surtout en 1993. Par la suite, ils suffisent à répondre aux besoins.

3° Les inventaires s'élèvent dans un premier temps, en attendant les nouveaux équipements; puis ils redescendent peu à peu.

4° Le déficit de gestion anticipé pour 1991, soit 558 000 tonnes (tableau 59), est réduit à 443 000, puisque 115 000 tonnes sont accumulées en inventaire. Le déficit de gestion tombe à 40 000 tonnes en 1996, soit l'équivalent des déchets pouvant encore échapper aux réseaux de collecte.

Figure extraite de la page 227 du document final

Figure 2
Synthèse des grands mandats du système de prise en charge des déchets dangereux


MENVIQ
• Formulation des politiques, des lois et des règlements
• Planification
• Concertation
• Animation
Sociétés régionales
• Mobilisation et concertation régionale
• Établissement des priorités régionales
• Organisation en région de la collecte, du transport et des centres de transfert
Régie des déchets dangereux
• Application du R.D.D. et d'autres règlements
• Émission des certificats d'autorisation aux exploitants du secteur
• Perception de la redevance
• Encadrement de la tarification
• Tenue d'audiences publiques
• Pouvoir d'enquêtes
RECYC
• Examen des possibilités de recyclage et de valorisation des déchets dangereux
• Création d'une Bourse des déchets dangereux
• Mandats spécifiques pour les pneus hors d'usage, les huiles usées, les piles, etc
SQAE
• Gestion des boues d'épuration des usines municipales de traitement des eaux usées
• Gestion du programme de réhabilitation des sites contaminés
• Suivi des fonds pour le contrôle après fermeture des entreprises de prise en charge
Producteurs de déchets dangereux
Entreprises de prise en charge des déchets dangereux
Régulation
Délégation
Association

FUTURE DIRECTIONS FOR HAZARDOUS WASTE MANAGEMENT IN ALBERTA

By
Ken J. Simpson, M.Sc., P. Eng.
President & Chief Executive Officer
Alberta Special Waste Management Corporation
Edmonton, Canada

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INTRODUCTION

Hazardous waste is a relative new-comer to the environmental scene. While air and water pollution control efforts have been around for several decades, it is only in the past 10 or so years that regulatory agencies, industry and the public have come to recognize toxic waste as a major threat to the global environment.

It is encouraging however, that in 10 short years, major initiatives have been put in place, not only in Alberta but in many other jurisdictions around the world, to analyze, identify, evaluate and begin corrective action for a number of serious problems. Many industries have established waste management policy making at very high levels within their corporate structures which has lead to vastly improved waste disposal practices and waste minimization initiatives. Governments at all levels are establishing qualified teams to regulate and control the overall management of waste.

However we still have a very long way to go. Even in Alberta, which is perhaps the most advanced waste management jurisdiction in North America, many potential problems exist for regulators and industrial waste managers alike. Surface and groundwater may be threatened by illegal or improper dumping of toxic material into uncontrolled landfills, surface water bodies or sewer systems and large amounts of stored wastes could go untreated from lack of suitable resources.

My talk today will attempt to outline a number of the successes that have been made in Alberta, an overview of the challenges we expect to encounter in the next decade and finally how we plan to meet those challenges given the intense competition for resources.

THE ALBERTA SYSTEM

In the early 1980's, Alberta as well as the rest of the world was just becoming aware of the problems of land and groundwater pollution. Hazardous waste was being disposed in pits, lagoons, unsecure landfills, or sewer systems with little thought given to the potential damage to the environment.

The low cost of disposal relegated it in many cases to a janitorial function, which was of little or no interest to industry management or government officials.

The Alberta System for managing hazardous waste began with the recommendation of several expert committees and a set of public hearings in 1981. The consensus at the time was that Alberta needed a comprehensive system for hazardous waste management which included "cradle to grave" control. Foremost in the minds of regulators, and the public was continued protection of public health and the environment. With this goal in mind the Alberta Special Waste Management Corporation (ASWMC) was brought into being in 1984. Its prime function was to ensure the development and safe operation of a comprehensive system for the management of hazardous waste that was being sent off-site for disposal. The vision of the system by ASWMC in 1984 was to establish a state-of-the-art treatment facility with a system of collection and transfer stations strategically located around the province. A controlled transportation network would link the components.

There was debate, and at times controversy, about where, when and how such a facility should be built, and importantly, there was public participation. Community and special interest groups were consulted and municipal councils were invited to participate in the process. Information was provided to the many who asked.

Several Alberta communities responded to the call to be host of a special waste treatment centre. Each met the necessary environmental criteria and each had held a plebiscite that indicated that the majority of citizens were in favor of hosting the facility. Following an intense period of debate, the Alberta Cabinet chose a site near Swan Hills for Canada's first integrated hazardous waste treatment facility.

DEVELOPMENT OF INFRASTRUCTURE

Soon after the selection of the Swan Hills site, ASWMC began to provide services to enable construction of the plant to begin. 10 km of road to the site was rebuilt and necessary supplies of power, natural gas, telephone and industrial water were provided.

The ASWMC entered into a Joint Venture with Bow Valley Resource Services Ltd. of Calgary, Alberta (now Bovar Inc.) to develop and own the facility. Chem-Security (Alberta) Ltd., a subsidiary of Bovar, was contracted to build and operate the plant using world class state-of-the-art technology.

CONCEPTUALIZATION OF THE CENTRAL FACILITY

Design of the facility required knowledge of both the wastes requiring treatment and the standards demanded by the regulatory agencies and local community.

Inventories of hazardous waste in Alberta suggested that up to 100,000 tonnes is generated each year. Based on European experience a ratio of 1/4 was applied to arrive at the amount of waste which could be available for off-site treatment. Therefore the initial design capacity was set at 25,000 tonnes in two phases. Phase I included 11,000 tonnes of organic treatment capacity and 4,000 tonnes of inorganic treatment capacity.

In designing the facility, four guidelines were established:

- o Build Small - we can always add, but cannot easily reduce capacity.
- o Build Flexible - we should plan facilities in such a way as to allow them to be easily modified or expanded, to accommodate additional or new waste streams.
- o Build Modular - as in the auto industry, we should standardize components as much as possible to ensure easy access to replacement or additional parts and, of course, design and engineering costs if the plant is expanded.
- o Review Options - we are entering a period of numerous and increasing technological advances in the field of waste treatment and should maintain the development constantly to take advantage of new and innovative techniques and equipment - we must keep an open mind.

FACILITY COMPONENTS

High Temperature Incinerator

The heart of the plant is a state-of-the-art waste incinerator which makes use of an innovative Swiss design known as the "rocking kiln system", a compact version of the rotary kiln that agitates the waste in the primary combustion chamber by a rocking rather than rotating motion.

The twin rocking kiln furnaces are designed to provide controlled incineration of both liquid and solid organic wastes such as solvents, oils, pesticides and PCBs at temperatures of 1200°C.

A complete pollution control train and continuous monitoring ensures that all emissions are kept below allowable limits.

A third kiln (conventional rotary) was recently added to the plant to help accommodate the increasing amounts of solid burnable waste requiring treatment in Alberta. This addition has raised the organic treatment capacity to about 13,000 tonnes/year.

Phys/Chem Treatment Facility

Inorganic wastes are received in liquid, sludge and solid forms and the plant is able to handle a range of substances varying from waste acids and heavy metals to cyanides, in varying strengths and mixtures.

Treatments capable of being performed include neutralization, precipitation, oxidation/reduction and the resultant sludges, floculants and precipitates are dewatered using a filter press.

Stabilization

The stabilization process is provided for treatment of residues and effluents and comprises solidification and/or fixation. Fixation is a process whereby chemically reactive compounds such as cement are mixed with the water and other components in sludges and other aqueous wastes to form more stable solids such as concrete which both immobilizes and, in some cases, chemically changes the waste to render it non-toxic and landfillable.

Secure Landfill

The landfill area is comprised of a series of trenches or cells, whose location at the technically sound site, affords a natural protection of the environment from the materials that may be placed in it. The area is underlain by 15 meters of dense clay till with a permability of 10^{-7}cm/sec. In addition to the natural protection afforded by the geology of the site, measures such as stabilization of wastes and a comprehensive synthetic liner with a network of drainage systems to entrap and collect any leachate. Collection systems are constantly monitored, however, since no liquids are placed in the secure landfill and the active cells are completely covered by a rigid roof/structure, it is highly unlikely any leachate can be generated.

Injection Deepwell

Deepwell injection is a widely used technique in the oil industry and petrochemical industry in Alberta. Liquids are injected into suitable geological formations which are isolated from any aquifer or potable water. In the case of the Treatment Centre, this method of disposal is used for process waste water, treated waste water from the incineration scrubber, site run-off water, and wash water from the truck decontamination system. The deepwell is not used for the disposal of any hazardous wastes.

Prior to injection, waste water is treated to ensure compatibility with the zone, in fact, the quality of water that is injected is of a higher quality than that in the zone.

PERMITS AND LICENSING

The Facility is subject to approval and licensing under the Alberta Clean Air and Water Acts. During the winter of 1987 the incinerator underwent a comprehensive test burn to establish and prove out the destruction and removal efficiency as well as the emission criteria for the stack gases. The incinerator is designed for 99.9999% removal of chlorinated hydrocarbons and it must show this on a regular basis on a number of Principal Organic Hazardous Constituants (POHCs).

Licenses are also necessary for other components of the Facility such as the landfill and the deepwell.

EXPANSION OF THE SYSTEM

Now that the Central Facility is fully operational, ASWMC is concentrating on the development of the collection, transfer and transportation systems.

Two transfer stations are presently in operation, one in Calgary and one in Nisku, just south of Edmonton. Other key locations are under active development with concurrent public involvement programs. We have found that public concerns over unknown hazards extends to collection and storage operations as much as treatment and disposal facilities. Considerable effort must be spent to fully inform the public in not only the facts of proper waste management but the hazards of the status quo ie: land dumping or improper storage.

Other initiatives of the ASWMC include:

- Toxic Round Ups (Annual) - collection and disposal of household hazardous waste in 130 Alberta communities (500 tonnes in 1990).
- Great Drug Round Up (Annual) - collection of used drugs at pharmacies and disposal at Swan Hills.
- Pesticide Container Collection and Recycle - clean up of approximately 800,000 plastic and metal containers per year.
- School Chemical Management
- Household Batteries
- Used Oil Management
- Waste Reduction Initiatives

ENTRUST CANADA INC.

Because of the uniqueness of the Alberta System and especially the Swan Hills facility, a large number of representatives from other jurisdictions have come to Alberta to visit and learn how the system was put in place. Visitors from as far away as Singapore, Saudi Arabia, Russia and Australia have joined the more than 1,500 people per year who tour the plant.

This global interest inspired ASWMC to develop a concept whereby the expertise developed in environmental and waste management could be exported to the world. Entrust Canada Inc. is a company set up under the auspices of ASWMC to coordinate the expertise of Alberta companies and institutions in exporting the technological and socioeconomic know how vitally needed by many nations around the world. Initiatives are underway in Saudi Arabia, The Soviet Union and several countries in the Pacific Basin.

Having briefly outlined a number of the successes of the Alberta System, I would like to now turn to a discussion of some of the challenges we still face, not only here but worldwide.

GLOBAL CHALLENGES FOR THE 90's

The environmental challenges in the next decade will be global in scope. The world is too small to isolate problems such as global warming, depletion of the ozone layer and massive ocean and land pollution. Even seemingly local problems such as liability for contaminated sites have worldwide implications especially when they involve transboundary movement of toxic substances.

In my view the most critical problem facing the decision makers in the next decade will be allocation of the already scarce resources of qualified manpower and funding. The collective nations of the world have shown themselves unable to produce enough trained personnel to even keep abreast of the rapidly deteriorating environmental situation, let alone begin to develop and implement the necessary programs to reverse the trend. And I am sure I do not have to expound on the lack of financial resources at all levels of government and industry to adequately attack the problems, given the myriad of competitive needs and demands. It will be the supreme test of our present and future leaders to choose the correct strategies and make these critical allocations of resources.

Another critical challenge will be the management of public concern. There exists now, at least in the minds of some, a need for and a faith in the concept of zero risk. Qualified scientists know this is an impossible goal and that risk can only be managed, never eliminated. Unfortunately we are subjected almost on a daily basis, to cries for zero discharge, zero effluent, zero levels of contaminants - in effect a world with no risk. In many cases these demands come from uninformed media or politically motivated individuals but sadly, many also come from scientists who have forgotten that all risk is relative. We must somehow learn to explain risk analysis and risk management to the public or face continued opposition to the very solutions necessary to solve our environmental problems.

A related concept is the misunderstanding of the significance of limits of detection. Analytical chemists must be commended for their skill in developing technology to measure ever decreasing levels of chemicals in the environment. From parts per hundred fifty years ago to parts per thousand, parts per million, parts per trillion and even parts per quadrillion today means we can measure almost anything anywhere.

Unfortunately much of the public considers the presence of even a minute quantity of a substance in the air or water as being hazardous even though there is no evidence of any danger. We again must work to show that threshold levels are scientifically defensible and that "media toxicology" will only harm efforts at public understanding.

A final global challenge involves the problem of unlimited liability. We have already seen the standard pollution exclusion clauses in insurance policies where coverage is denied for any damage involving pollution or toxic chemicals. It is also difficult if not impossible to obtain Environmental Impairment Liability (EIL) for many industrial operations. Both these developments have caused great concern for risk managers, regulators and industrial owners alike since in many cases there is no way of limiting the liability caused by pollution. While this may result in more careful waste disposal (for example, the Alberta System accepts all liability for waste in it's care) the downside is that less facilities and operations will be established to manage toxic and hazardous material, facilities that are urgently needed and should not be hampered by this liability straight jacket.

CHALLENGES FOR THE ALBERTA SYSTEM

The foregoing outline of global challenges will certainly apply to Alberta to a lesser or greater degree. However there are a number of issues that are quite specific to our system and will require resolution in the next few years.

The first of these is financial viability. At the present time ASWMC owns 40% of the system including the Swan Hills plant but we also cover all operating losses. Because of limited capacity, the plant is not able to match operating costs with revenue and requires a subsidy of $18 to $20 million per year. This should improve as the system capacity is expanded but the question we must ask is how much should this plant be subsidized and for how long? Should the prices for treatment be raised to cover operating costs? Should the market area be expanded beyond Alberta to other provinces to optimize capacity? Should we be requiring more wastes to be destroyed instead of landfilled, and finally does the government, through ASWMC need to be involved in the system at all? When and under what circumstances could the system be made totally private? The debate continues.

A second major challenge is to stay knowledgeable of the waste stream which is constantly changing in type, concentration and quantity. Already we have seen Alberta hazardous wastes go from 75% to 33% liquid and the heat value of organic waste increase by 50%. The waste stream continues to become more concentrated as industry changes processes to reduce and recycle waste at the point of generation. Vast amounts of contaminated soil now need treatment because of site clean-ups and remediation. All of these changes have occurred since 1985! The challenge is to correctly predict the make-up of the waste stream in 1995 and beyond and have the proper technology in place to manage it.

The final challenge to the Alberta System is to maintain public confidence. We have been extremely fortunate in having the Town of Swan Hills volunteer their community to host the treatment plant. They have also been totally supportive of our expansion plans and patient with our start up problems. We know we must never take this support for granted and therefore must remain committed to continued ongoing consultation with our advisory committee, Town Council and the citizens at large.

Concurrently we must continue to enlist the support of Albertans in general to ensure that other necessary facilities are established and operated to the benefit of future generations.

Short term initiatives for the Alberta System include an expansion of the collection and transfer network to accommodate small and medium sized generators.

In early 1991 following an intense public participation process application for a major incineration expansion will be made. The addition of a 40,000 tonne/year rotary kiln will allow us to truly manage Alberta's hazardous waste and move the plant from the utility model to an economic operation.

CONCLUSION

The 1990's could be called the "second decade" of hazardous waste management. As we have seen in the first decade, a serious problem has been identified and a comprehensive management plan initiated. It is our challenge and our responsibility, into the 1990's, to ensure that the management plan is put into place efficiently and effectively and with the support of the Alberta public.

Alberta has been fortunate to have had leaders in government and industry with the vision to start the process of prevention and remediation of toxic waste contamination while most other jurisdictions are still debating the options. It appears it will be at least another 4 to 5 years before any other comprehensive treatment facilities are built in Canada. By then we will have had 8 years operating experience and the cleanest environment in the country.

I think we can afford to be just a little bit proud.

Sixth Canadian Environmental
Government Affairs Seminar

Notes from a Luncheon Address

by

Charles Caccia
MP Davenport

October 24, 1990

Thanks for opportunity to speak today; but warn you that I'm no Ralph Klein!

Congratulate on choice of theme: "*Response to the Canadian public's dramatic increase in the level of Concern about the environment and their increasing demands for additional environmental regulation*", and the question of "What are the real environmental priorities for Canada for the future?"

Explain why

- What will bring about changes in attitudes?
- First we must ask ourselves ***why*** would attitudes change:

because of...

- a sense of insecurity about the future?
- the damaged environment around us?
- a change in values as to
- quality of life?
- a new sense of inter-generational responsibility?
- Because of emerging linkages between the environment and the economy?

Maybe a combination of these factors is already at work and beginning to mold a change in attitudes: there is change in the air! but we do not know how strong it is and how far it will influence the decision-making process of governments which, as we all know, rarely move unless they come under pressure. Yet changing attitudes would go a long way in motivating governments which understand (1) pressures and (2) the danger of being out of synchronization with the public mood.

- the public is nervous, the level of anxiety is high. So much that even the U.S. administration is moving belatedly - on acid rain, five years after Canada and twenty other nations signed the Helsinki Protocol on SO_2.

- different governments will react in different ways, of course. Reliance on the marketplace, shifting the burden of responsibility to the provinces, settling for the lowest common denominator in stakeholder consultations, shunning a strong regulatory and enforcement regime are the hallmarks of conservative governments. Public education and advocacy, strong federalism, strong leadership in defence of the public interest are likely to be components of more enlightened, liberal regimes.

- a profound change in the manner we manage our natural resources and the public good will have to occur. No longer can water and air be seen as the places where pollution is to be dumped at the expense of those downstream and downwind. This does not mean the emergence of the millennium or of a new ethic.

What it means is a number of things:

a) That industry is beginning to realize that it pays to prevent pollution

b) That consumers are also realizing they have a role to play through their purchasing power

c) That the more enlightened business leaders are beginning to worry about the long-term well being of the economy and the ability of business to succeed if the environment continues to be colonialized rather than treated as the indispensable foundation on which to build a sound economy

d) That governments, for their part, must assist industry in developing long-term plans by setting out very clearly at the outset the ultimate targets or goals that must be achieved, instead of constantly moving the goalposts in response to changing public pressure

Other important changes in outlook are required, including:

- a shift from reacting and curing to anticipating and preventing
- a shift from treating the effects to dealing with the causes
- an integration of environmental with economic policies, which is the essence of sustainable development
- a change in development assistance whereby such assistance is tailored to suit the needs, terms and values of the receiver rather than the donor
- a shift in energy policies from supply to demand management
- a profound change in forest management practices at home and a program of special aid to developing countries where deforestation of tropical forests is posing a threat to the global community
- an approach to natural resources on land and in oceans whereby we will harvest only the interest and not the capital of the resource

This can be summarized in two transparencies: one shows the type of economy we practice today, let us call it the "*cowboy economy*"; the second transparency attempts to illustrate an environmentally sustainable economy, let's call it the "*spaceship economy*".

Transforming what we do now to what we should be doing in future will be no easy task. However, it should be apparent by now that a business as usual approach cannot resolve the enormous problems that have been generated by our "*cowboy economy*".

I leave you with this thought - the planet earth itself is not in danger, it will continue to revolve around the sun for hundreds of millions of years yet - with us or without us. The fight is to keep the human species as a passenger on what Buckminster Fuller termed "*spaceship earth*".

C. Caccia - October 24, 1990

Sixth Canadian Environmental
Government Affairs Seminar

SUMMARY of PANEL DISCUSSION

by

Roger J. Lafleur

October 24, 1990

The fifth session, held on Wednesday afternoon, October 24, 1990 was a panel discussion among representatives of governments, public interest organizations and industry. Chaired by the *Honorable Charles Caccia*, Member of Parliament and Opposition Critic in the House of Commons for the Environment, the discussions focused on a definition of future environmental priorities for Canada.

The seven panelists were *Mr. Bruce Walker*, of the environmental group STOP, Montreal; *Ms. Lois Corbett*, from the Ecology Action Centre; *Mr. Michael Horgan*, with Environment Canada, Economic and Policy Analysis Branch; *Mr. Kerry Mattila*, representing the Canadian Petroleum Products Institute; *Dr. David Balsillie*, Assistant Deputy Minister, Ontario Ministry of the Environment; *Mr. Michael Keating*, Toronto, journalist; and *Mr. Hans Konow*, representing the Canadian Electrical Association.

A common thread of thought evolved from most of the comments made by the panelists. In the current national debate about the Canadian environment and the priorities that the environmental issues as a whole and individually must be given, many panelists considered that the very process by which national priorities are set must be reexamined. With the many conflicting and exclusive demands on society's resources that the population makes for environmental protection, an effective, new process is required to make those choices. The representatives from all sectors, public pressure groups, industry, government agreed on one fundamental aspect: that any new process must be transparent, public and involve all of the players. Furthermore the process must be based on full information for the Canadian public as well bring about a higher level of environmental education.

Ms. Corbett was even more dramatic: in her view this was the result of the dying of the old order in society and the growing of a new one. There is thus a need for new ways of thinking and acting for the protection on the environment. The issues are global, and global environmental security will only be achieved through the power of the people controlling their own lives at the community level. The population must therefore take action: mobilizing itself at the community level, organizing at the national level, and finally communicating at the international level.

Mr. Horgan noted that the government did not have an easy task in setting priorities due to the considerable disagreements between the interested parties. This is the very reason that Environment Canada is embarking on extensive consultations to get the views of Canadians, as per example the recent Green Plan consultation. The Green Plan consultations showed that Canadians want action on environmental problems, action by the governments and also believe that individuals have an important role to play. The Green Plan will therefore reflect the need for non-traditional solutions other than regulations, such as education, information, economic and social instruments as incentives. The underlying theme will be a better environment through social responsibilities.

Mr. Mattila further defined the requirements of a national priority setting process. The process will have to properly scope the issues based on sound science; it will need to be totally transparent, open not secret; it must be consistent and have its authority on discipline and not power. The solutions will have to be broad, considering the whole ecosystem, going beyond the limitations of a regulatory approach that focuses only on a portion of the problem. Finally a true evaluation has to be made of "who pays", society needs to know.

Mr. Walker noted that there are a great deal of issues facing Canadians. A major one is the management of solid wastes. The solution for this problem will be a true effort to implement the 4-R's. There will however still be a requirement for disposal of wastes.Whatever disposal method is chosen, landfill or incineration, the choice must be made through proper public consultations.

Dr. Balsillie noted that a lot had been achieved in the past years. However the public bases its demands on the perceived environmental risks. As a result the public is asking for more to be done faster. Part of the reason for this state of affairs is the lack of government and industry credibility. Despite the scientific capability and expertise of the two groups, they are not believed. A challenge for the government agencies will be to redeem its credibility and thereby overcome the NIMBY syndrome. Future government actions are going to have to take into account the limited resources available. Up front planning will be needed, public attitude has to be changed and the other legislation must also take into account the environment.

Mr. Keating, as a member of the media, dealt with "this business of the news media setting the environmental agenda." He pointed out that the media react to issues raised by others, however reality imposes a number of constraints such that the media acts as a filter of ideas. The media operate under real deadlines, space or air time is very limited, and editors are therefore selective on what stories get the coverage. The media is both a driving and a driven force: typically an information cycle is set up: beginning with a story, generating public awareness and bringing out demands for action. A chain reaction is created resulting in more stories.

Mr. Keating further recognized that environmental journalism in Canada is altogether good, considering that the journalists all had to learn in the field. Most media people are professional; but there is no consensus, no coherent picture in Canada on environmental issues. The political leaders, at all levels, do not give a clear signal. As a result the greatest weakness in reporting is in the balancing of priorities. Nevertheless, the media will be an even more powerful player because the issues will demand more intensive coverage.

Mr. Hans Konow dwelt in detail on what was required of a new decision process for the protection of Canada's environment. First, a clear and comprehensive definition of the issues is required; second, a system to prioritize the issues is needed. Solutions to the issues must then be found by dialogue between all of the partners. The solutions to the issues must be harmonized, avoiding negative or counter-productive impacts. Finally, the key to all solutions will be in overcoming the NIMBY syndrome due to lack of information resulting in basic human fear. The good news is that Canadians are beginning to cooperate to solve the environmental issues, there is growing consensus on the targets and means to achieve them. However, there will be hard choices for society to make in the 1990's.